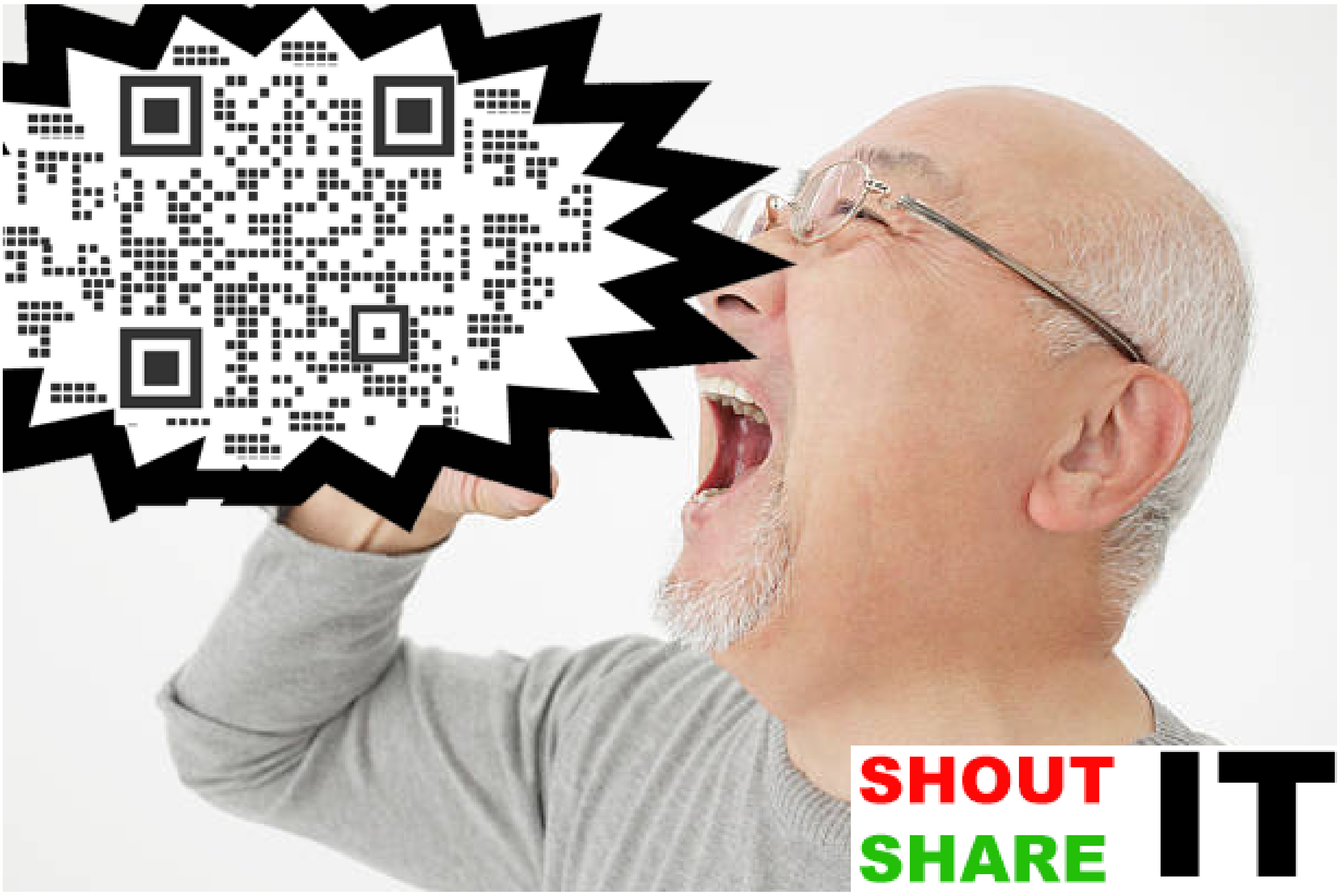

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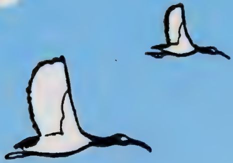
CORRECTIONS TO TEXT

Page	5	Line	11	Colibri not Colubri
“	20	“	31	pyrrhophrys not pyrrophrys
“	22	“	15	gloriosissima not gloriossisima
“	26	“	33	harrisii not harrisi
“	27	“	8	" " "
“	32	“	2 & 7	lawrencii not lawrenci
“	“	“	3	Catamenia not Catemenia
“	88	“	17	Nannopsittaca not Nannopsitta
“	117	“	18	hollandicus not noaehollandiae
“	140	“	47	albifrons not albitrons
“	157	“	30	Turdus not Turlus
“	“	“	31	Cinnyricinclus leucogaster not Cinnyricintus leucagante
“	163	“	8	Pluvialis not Pluvalis
“	165	“	9	decaocto not decaoto
“	“	“	18	senegalensis not sengalensis
“	172	“	30	Nectarinia not Nectarina
“	173	“	4	excubitor not exubitor
“	228	“	8	Philydor not Phylidor
“	232	“	19	Carduelis not Carduellis

S 102

Bulletin of the British Ornithologists' Club



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March 2003

FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

Tuesday 29 April – ANNUAL GENERAL MEETING AT 6.pm, followed by a **Club Social Evening.** There will be no speaker, but Members are invited to bring along one or two slides (or a specimen) of a bird of topical interest, and to speak **for not more than 5-10 minutes** about it. The aim will be to generate discussion, and to facilitate the exchange of information between Members.

Applications to the Hon. Secretary, including subjects to be raised, and any special facilities required, by **15 April** please.

Tuesday 24 June – Dr. Nigel Cleere on "*Goatsuckers, Frogmouths and Oilbirds*"**.** Nigel is currently a research asistant at the Bird Group, Dept. of Zoology, The Natural History Museum, Tring, and is the assistant manager for Project Biomap, working on Colombian birds. He has had a special interest in nightjars for many years and has studied them in Europe, the Middle East, Africa and North and South America. He also has extensive museum experience, having examined all Caprimulgiform species and subscpecies in collections throughout Europe and North America. He is author of *Nightjars of the World*, and of numerous articles and notes on this family, and is currently preparing a nightjar photoguide. He has been a BTO 'A' ringer since 1974, ringing tens of thousands of birds of birds of over 300 species in many parts of the world, including Portugal, Israel, Kuwait, east, west and southern Africa. and Thailand.

Applications to the Hon. Secretary by **10 June** please.

Future meetings – Tuesdays:

23 September
Dr. Steven Parry: *"Novel Perspectives in Darwinian Ornithology*".

4 November
Dr. Jim Groombridge: *"Restoring rare honeycreepers in Hawaii: the cutting edge of bird conservation".*

2 December
Amberley Moore and James Jobling: "*The unknown traveller – the ornithological collections of Louis Fraser*".

MEETINGS are normally held in the **Sherfield Building** of **Imperial College**, South Kensington, London, SW7. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. (Limited car parking facilities can be reserved, on prior application to the Hon. Secretary). The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about 8.00 pm. Dinner charges were increased to **£18.50**, as from **1st January 2003.**

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in **2004,** giving as much advance notice as possible.

Enquiries to *Hon. Secretary,* Michael Casement, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA. UK. Tel/FAX:01730-825280 (or Email: mbcasement@aol.com).

Bulletin of the British Ornithologists' Club

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Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 123 No. 1 Published 15 March 2003

CLUB NEWS

Membership News

It is with great regret that we report the deaths of Dr Dean Amadon (1980-2003), Chris Mead (1974-2003, (*Committee* 1971-75), and also J.D. Macdonald (1936-68).

Hon Life Member - Rule (3). Congratulations to Mrs D.M. (Diana) Bradley after 50 years continuous membership (1953-2003) - (*Committee 1968-1972,1975-1978, Hon. Treasurer 1978-1989*).

The ecology of the Egyptian Goose at Holkham Park, Norfolk. Bryan Sage has written this booklet (Occasional Publication of the Norfolk and Norwich Naturalists' Society No. 8, undated); copies can be obtained from him at Waveney Houes, Waveney Close, Wells-next-the-Sea, Norfolk NR23 1HU, price £1.50.

Correspondence on membership, changes of address and all other matters should be addressed to the *Hon. Secretary,* Cdr M.B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants, GU31 5PA, UK. (or E-mail: mbcasement@aol.com). For details of Club Meetings see inside front cover.

Subscription Rates for 2003 are unchanged from last year @ **£18.00 p.a.** but **£12.00 only** for paid-up Members of BOU and renewals were due on 1st January. If you have not already done so, please complete NOW the subscription renewal form, enclosed with the December issue 122 (4), to avoid the need for further reminders. For those wishing to send credit card details (at their own risk), please use: **secretary@boc-online.org** for added security.

The Membership List 2003 is available, free of charge to all requesting a copy, on application to the *Hon. Secretary*: This shows addresses (including E-mail addresses, where known), for all paid-up Members as at 31 December 2002. Members are requested to inform *the Hon. Secretary* of all corrections or changes, without delay, for despatch of the *Bulletin*. To offset the cost of postage, any contribution, or a stamped and addressed (A5-sized) envelope will be gratefully accepted.

The BOC Website - http://www.boc-online.org The number of enquiries continues dramatically to increase, and Paul Salaman is currently supervising a major re-design, incorporating a number of new features to improve its usefulness and to make it more user-friendly. Do please look at it, and let us have your comments.

Annual General Meeting

The Annual General Meeting of the British Ornithologist's Club will be held in the Sherfield Building, Imperial College, London SW7 at 6.00pm on Tuesday 29 April 2003.

AGENDA

1. Minutes of the 2002 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 122 (3): 161-162).
2. Chairman's report
3. Trustees Annual Report and Accounts for 2002 (both to be distributed at the meeting).
4. The *Bulletin.*
5. Publications report

6. The election of Officers. The Committee proposes that:
    (i) Mrs M.N. Muller be elected as *Vice-Chairman* (vice Revd. T.W. Gladwin)
    (ii) S.A.H. Statham, C.W.R Storey and I.R. Bishop be elected vice R.E. Scott and J.A. Jobling who retire on completion of their 4-year terms of office, and vice Mrs M.N. Muller on her election as *Vice-Chairman*.
    (iii) Mr D.J. Montier be re-elected as *Honorary Treasurer,*
    (iv) Commander M.B. Casement, OBE, RN, be re-elected *Hon. Secretary*.
7. Any other business of which notice shall have been given in accordance with Rule (12).

The 913th meeting of the Club was held Tuesday 3rd December 2002, in the Sherfield Building Annexe, Imperial College, attended by 26 Members and 12 guests.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, D.R. CALDER, Cdr M.B. CASEMENT RN, Professor R.A. CHEKE, F.M. GAUNTLETT, A. GIBBS, D. GRIFFIN, J.A. JOBLING, C.A.R. HELM, K. HERON, J. HORNBUCKLE (*Speaker*), J.P. HUME, S.W. LOWE, D.J. MONTIER, Mrs A.M. MOORE, Mrs M.N. MULLER, Dr. R.P. PRŶS-JONES, R.E. SCOTT, Dr R.C. SELF, T.R. SMEETON, S.A.H. STATHAM, F.D. STEINHEIMER, N.H.F. STONE, C.W.R. STOREY, and R.D.E. STOTT.

Guests attending were: Mrs J.B. CALDER, Mrs C.R. CASEMENT, Mrs M.H. GAUNTLETT, Ms K. HOFF, M. HUNNYBUN, Mrs J. JONES, Mrs M. MONTIER, C.A. MULLER, D. RUSSELL, Dr B.M. ROGERS, Mrs S. STONE, and R.W. WEBSTER

After dinner, Jon Hornbuckle gave a presentation, lavishly illustrated with slides, entitled *The Beni Biological Station, Bolivia.* The following is a brief synopsis.

The Beni Biological Station (BBS) is a large (*c*. 160,000 ha) protected area of lowland tropical forest (70%), together with savanna (with forest islands) and wetlands (30%), located in lowland Bolivia. Research teams, led by club member Dr Robin Brace (University of Nottingham) and funded by the Earthwatch Institute and the Darwin Initiative, visited the BBS for 6 weeks each year during six consecutive austral winters (1994–99). Many new species for the reserve were observed, taking the inventory to 500 species. Major finds included the first records of Rufous-faced Crake *Laterallus xenopterus* and Speckled Rail *Coturnicops notatus* for Bolivia, and breeding populations of the threatened Black-masked Finch *Coryphaspiza melanotis*, near-threatened Sharp-tailed Tyrant *Culicivora caudacuta*, and of the very local Crested Doradito *Pseudocolopteryx sclateri*. The rare Unicoloured Thrush *Turdus haplochrous* (a Bolivian endemic), that had been found in the heart of the reserve in 1992 by an earlier University of Nottingham expedition, and the White-winged Nightjar *Caprimulgus candicans*, known in Bolivia from a single specimen taken in 1987, were not encountered during our fieldwork.

Jon was responsible for mist-netting and bird ringing: almost 3,800 birds, of 190 species, were caught and most, except hummingbirds, were ringed. Most numerous in the nets were Band-tailed Manakins *Pipra fasciicauda* (307 ringed), with data analysis (65 individuals re-captured) revealing a high adult survival rate (69%) (though only 47% taking transient adults into account), but a much lower rate (20%) for immatures (first year birds). Manakin survivorship in an isolated forest fragment (11.9 ha) was found to be similar to that recorded for continuous forest, but given the proportion of mobile adults detected, a decrease in immigration into the fragment could easily lead to the demise of such an isolated population. Despite obvious species sharing between most of the various habitats making up the natural forest-savanna landscape mosaic studied, site fidelity was extremely marked: only 34 individuals across 20 species recorded as having moved between net sites (excluding intra-savanna movements). Site fidelity extended even to individuals of the relatively scarce Hudson's Black-Tyrant *Knipolegus hudsoni*, an austral migrant from Argentina (for up to four years). Some interesting, though contentious, identification issues were met with: a *Turdus* thrush having a prominent white eye-ring; Black-masked Finches displaying two plumage types in addition to mature male plumage, and *Synallaxis* spinetails with variable plumage (e.g. apparently Pale-breasted Spinetails *S. albescens* with rufous rather than brown rectrices).

The fact that the BBS is now surrounded almost entirely by cattle ranching areas, that are subject to high levels of grazing and affiliated dry season burns, gives cause for conservation concern, but with regard to the reserve core itself, only the illegal logging of Mahogany is problematical at the present time. The avifauna of this core (especially forest in the north-east) is still relatively poorly known, and thus further fieldwork is to be encouraged.

The talk was followed by a lively period of questions and discussion.

The 914th meeting of the Club was held Tuesday 21st January 2003, in the Sherfield Building Annexe, Imperial College. 24 Members and 10 guests were present.

Members attending were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Ms D.V. BREESE, D.R. CALDER, Cdr M.B. CASEMENT RN, Professor R.A. CHEKE, J.E. EKSTROM (*Speaker*), F.M. GAUNTLETT, Revd. T.W. GLADWIN, D. GRIFFIN, J.P. HUME, R.H. KETTLE, D.J. MONTIER, R.G. MORGAN, Mrs A.M. MOORE, Mrs M.N. MULLER, P.J. OLIVER, Dr. R.P. PRŶS-JONES, P.J. SELLAR, T.R. SMEETON, G.A. SMITH, S.A.H. STATHAM, C.W.R. STOREY, and Miss R.E. TINGAY.

Guests attending were: Mrs C.R. CASEMENT, Ms K. FREEMAN, Mrs M.H. GAUNTLETT, Mrs M.H. GLADWIN, Dr J.J. GROOMBRIDGE, Mrs M. MONTIER, P.J. MOORE, Dr. S.A. TAMUNGANG, Miss R. VOLLOCH, and R.W. WEBSTER

After dinner, Jonathan Ekstrom gave a fascinating presentation about his recent PhD research study on the unusual breeding behaviour of vasa parrots *Coracopsis* spp. in Madagascar, under the title '*Singing for your supper: the bizarre sex life of Madagascar's Greater Vasa parrot*'. The following is a brief synopsis:

Vasa Parrots are endemic to Madagascar and nearby islands. Two species make up the genus: the Greater Vasa *C. vasa* and the Lesser Vasa *C. nigra*. *Coracopsis* parrots are found in a remarkable variety of habitat types, from sub-montane rainforest to the spiny sub-desert scrub of south-western Madagascar. In some areas, they are even regarded as pests of crops like maize, rice and groundnuts. Given their body size they have a large clutch of five eggs, laid in a nest-hole during the single breeding season of November to January at the beginning of the wet season. The incubation period is just 16-17 days, and the nestling period just 45-49 days. Greater Vasa Parrots appear to be an archaic species derived from an ancient lineage. Several other unusual features of their biology have fascinated ornithologists: 1) males possess a large cloacal phallus used in protracted, tied copulations lasting up to two hours; 2) during the breeding season, females lose all their head feathers and develop bright orange skin; 3) females are dominant to males and the species rarely forms pairs in captivity, preferring loose polygamous sexual relations.

The speaker carried out field studies on the Greater Vasa Parrots in the Kirindy forest of western Madagascar between 1999 and 2002; also DNA fingerprinting to assess the levels of promiscuity within the population. These methods produced some remarkable results:

Among birds, males are generally the competing sex: males are usually more brightly coloured, defend territories and sing to attract females and announce territory ownership. The Greater Vasa Parrot *Coracopsis vasa* has an unique form of sex-role reversal in which females sing to attract males, defend a territory and develop conspicuous colouration all during the chick-rearing period. The unusual characteristics of females are associated with a cooperatively polygynandrous mating system where both sexes copulate promiscuously, multiple paternity is common and males divide their paternal care, for which females compete, among several different nests. Females solicit copulations and courtship feeding from many different males, and as a result the effective size of polygynandrous associations are among the largest known in birds. Males could probably not utilise either paternity guard available to males (mate-guarding and frequent copulation), because of a combination of female dominance and the unusual copulatory behaviour. During the incubation and nestling periods, females sang and female song attracted males. Males never sang. Females with higher song rates attracted more males and received more food, which may benefit males since such females were in better condition and laid larger clutches. Song in female Greater Vasa Parrots appears to be an unusual example of sexual selection operating during the post-fertile period. A similar explanation may account for head-feather loss and the transformation of skin colour in females, but Jonathan was not able to test this idea. During the nestling period and at no other time, breeding females defended type C territories around their nest hole. Territory defence was directed towards other females who attempted to steal food from provisioning males arriving in the resident female's territory.

Greater Vasa Parrots are clearly one of the most fascinating birds we can study. Very little is known about the ecology and behaviour of most of the world's parrots, yet they remain the most endangered widespread bird family in the world, with over a quarter of its members threatened with extinction. Despite the momentous difficulties of studying parrots in the wild, as biologists we simply have to get out there climbing those trees to find out what these birds, so long treasured in captivity, actually get up to in the wild.

The presentation was followed by a prolonged and unusually lively question and discussion period.

Ornithological records from Trinidad and the Galapagos

We have deposited in the archives of the Ornithology & Rothschild Libraries at Tring the raw data of parts of our research in Trinidad from 1957 to 1961 and the Galapagos in 1963 and 1964. The records, on index cards and in manuscript notebooks, are the results of trapping and ringing, and of the study of nests. The trapping records, numbering several thousands, include wing-length and weight, plumage and soft-part details, and detailed moult data. The breeding records include details of nest-site and construction, clutch-size, incubation and fledging periods, intervals between broods, and nest success. Except for records of the food of *Steatornis* and the two Trinidad manakins, *Manacus manacus* and *Pipra erythrocephala*, they do not include data on behaviour and general ecology. A good deal of the information has been summarised in published papers, a convenient list of which for Trinidad may be found in the bibliography in Richard ffrench's *Birds of Trinidad and Tobago*; but there is much unpublished information, for example on nest-sites, incubation and fledging periods, plumages, and the sequence of moult.

These records are available for study by *bona fide* students on application to the Librarian, Ornithology & Rothschild Libraries, The Natural History Museum, Akeman St, Tring, Herts HP23 6AP, U.K.; e-mail: ornlib@nhm.ac.uk

D.W. & B.K. Snow

Bruijn's Brush-turkey *Aepypodius bruijnii*

Voisin *et al.* (*Bull. Brit. Orn. Cl.* 2000, 120: 146-148) reported the discovery of additional specimens of this species but at that stage ornithologists had not seen the bird in the wild. Dr René Dekker has reported that Iwein Mauro made field observations and discovered a nest mound during an opportunistic visit to Waigeo Island, Papua province, Indonesia in May 2002. He returned for two months in October 2002 and discovered 28 nest mounds in a small area, confirming the existence of a viable population. For more information see www.maleo.nl or www.worldtwitch.com

Ed.

Errata

122 (4): Note that the inside rear cover copy was erroneously transcribed from the copy for 121(4). The correct version can be found in 122(2) and 122(3). The editor apologises for this error.

In the paper by H. Lee Jones "Erroneous and unconfirmed bird records from Belize: setting the record straight", published in 122(3): 201-216, the table was inadvertently omitted. This is reproduced here:

TABLE 1

Allocation of species as yet unconfirmed for Belize to categories of likelihood of occurrence. Those that may occur rarely would be close to the limits of their known distribution; those that are possible as vagrants would be well outside their known limits of distribution or from currently known migration routes; those regarded as improbable are most likely to be misidentifications or to have been formerly listed in error.

Probable	*Buteo swainsoni*	*Calidris bairdii*
	Nyctibius grandis	*Tyrannus verticalis*
Possible (more likely)	*Oxyura jamaicensis*	*Charadrius melodus*
	Larus marinus	*Cypseloides niger*
	Colubri thalassinus	*Sayornis phoebe*
	Vireo bellii	*Regulus calendula*
	Dendroica chrysoparia	*Oporornis agilis*
Possible (less likely)	*Puffinus griseus*	*Tigrisoma lineatum*
	Haliaeetus leucocephalus	*Burhinus bistriatus*
	Zenaida aurita	*Caprimulgus salvini*
	Streptoprocne semicollaris	*Aeronautes saxatalis*
	Selasphorus rufus	*Myadestes occidentalis*
	Catharus aurantiirostris	*Dendroica pinus*
	Calamospiza melanocorys	*Passerina amoena*
Improbable	*Accipiter [striatus] chionogaster*	*Porphyrio porphyrio* (wild origin)
	Glaucidium gnoma	*Caprimulgus ridgwayi*
	Abeillia abeillei	*Amazilia viridifrons*
	Eugenes fulgens	*Dendrocolaptes picumnus*
	Xenotriccus mexicanus	*Vireo huttoni*
	Thryothorus coraya	*Polioptila albiloris*
	Piranga erythrocephala	*Tangara lavinia*
	Ammodramus humeralis	*Melospiza melodia*
	Icterus graduacauda	

BOOKS RECEIVED

Tomek, T. & Bochenski, Z. M. 2000. The comparative osteology of European corvids (Aves: Corvidae), with a key to the identification of their skeletal elements. 102 pp., 129 line drawings. ISBN 83-907187-8-2. Polska Akademia Nauk, Krakow. (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Krakow. www.iez.pan.krakow.pl). No price given.

This volume contributes to the specialist field of avian osteological identification, and is therefore not aimed at the general reader. Zooarchaeologists and palaeornithologists however, should find it a helpful tool in identifying remains of what can be an osteologically frustrating family.

Based on the authors' analysis of over 650 specimens from the collections of 14 institutions, the book deals with the comparison and identification of bones from 11 species of European corvid (*Garrulus glandarius*, *Perisoreus infaustus*, *Pica pica*, *Cyanopica cyanus*, *Nucifraga caryocatactes*, *Pyrrhocorax pyrrhocorax*, *P. graculus*, *Corvus monedula*, *C. corone*, *C. frugilegus* and *C. corax*). It consists of a brief introduction, followed by an explanation of the authors' methodology and then the osteological comparisons that form its core, which include both illustrated explanations of skeletal characters and morphometric tables. The main chapters close with a short discussion on corvid identification, accompanied by summaries of the diagnostic characters for each species and a useful reference list incorporating other important publications on corvid osteology. Lastly, two appendices provide examples of scatter diagrams of selected skeletal proportions and calculation tables for bone identification based on discriminant function analysis. I advise anyone intending to use the volume to read carefully the methodology and discussion chapters and gain a degree of familiarization with the overall layout before plunging into their specimens, as this will save them from some potential confusions later. Somewhat contrary to possible expectation, given the volume's title, it does not include an identification key as such, and would have been better described as a 'guide to identification'.

In the comparative chapter, each element is considered in turn, with the illustrated characters presented together with the relevant measurement tables. The illustrations are clear and the characters well-assessed but, as many of them are relative and often rather subtle, the use of comparative skeletal specimens alongside them is essential. It is worth noting that the diagrams' headings can appear somewhat cryptic, and are best read in conjunction with the summary tables in the discussion.

It should be recognized that, while the comparisons presented here will go a long way to helping researchers identify many corvid bones, they are not exhaustive. Guides such as this are extremely useful, but have their limitations, and can be misleading to the unwary. To avoid pitfalls, anyone using this book should heed the authors' strong recommendation of the use of as many factors as possible in reaching an identification. Additionally, the importance of using comparative specimens cannot be emphasised enough. Nevertheless, anyone dealing with bone identification on a regular basis will find this volume a valuable aide, and it deserves to become a well-thumbed reference in many a comparative collection.

Joanne H. Cooper

Fisher, Clemency (ed.) 2002. *A Passion for Natural History. The Life and Legacy of the 13th Earl of Derby* .Pp.240. Board of Trustees of the National Museums and Galleries on Merseyside, Liverpool. ISBN 1 902700 14 7. No price given.

This volume, together with an exhibition entitled "The Owl and the Pussycat", was conceived to commemorate the 150 years since the foundation of Liverpool Museum (now The National Museums and Galleries on Merseyside). It describes the many facets of the 13th Earl of Derby's life and his immensely important bequest which led to the foundation of the Museum. In addition to being an account of the individual contribution of this remarkable man it gives an important insight into the era of gentlemen scientists who provided much of the basis of our cultural heritage. A series of profusely illustrated, scholarly articles cover the Earl's childhood, his interests as a landowner, a social and cultural figure, politician, scientist (in the study of birds, mammals, botany and horticulture), bibliophile and patron of the arts. The book includes some 121 illustrated "catalogue entries", with well researched, informative annotations, which emphasise the excellence of the collections of specimens, books, illustrations and works of art amassed during the Earl's lifetime.

Of particular is the 13th Earl's relationship with Edward Lear. Lear was invited to paint the birds and mammals in the aviary and menagerie at the family home Knowsley and became a close friend of the family. It was at Knowsley that the nonsense verses were composed and, partly through the Earls patronage (and that of his successors the 14th and 15th Earls), that Lear was able to launch his career as a landscape painter. His work both as a painter of natural history subjects and landscapes is magnificiently illustrated in this book .

One can only marvel at the enthusiasm, energy and dedication of the 13th Earl. Whether building churches, schools or aviaries, organising his estates, a menagerie for study or amassing his splendid collections of natural history objects and books he was one of the giants of his era.

This book is an impressive and enjoyable work. It is packed with information, well researched, beautifully presented, with a full and useful bibliography allowing further research. It is a fitting celebration of the foundation of a Museum which continues to develop into the 21st century. The editor is to be congratulated.

I. R. Bishop

New and noteworthy bird records from the northern sector of the Western Andes of Colombia

by Andrés M. Cuervo, F. Gary Stiles, Carlos Daniel Cadena, Juan Lázaro Toro & Gustavo A. Londoño

Received 24 September 2001

The Western Andes (Cordillera Occidental) is the lowest and geologically youngest of the three Andean ranges of Colombia. The rain and cloud forests of the extremely wet Pacific slope are relatively intact in most areas but the drier, rain-shadow vegetation of the eastern (Cauca Valley) slope has been subject to much greater human disturbance. Ornithological studies in the Western Andes, subsequent to initial collecting expeditions (see Chapman 1917), concentrated largely on the southern sector of this cordillera, in the departments of Nariño, Cauca and Valle (e.g., Hilty 1997, Miller 1963, Negret 1994, Orejuela 1987, Orejuela *et al.* 1979, Salaman 1994). In contrast, the northern sector, roughly that portion included within the departments of Risaralda, Chocó and Antioquia, received little study during most of the latter half of the twentieth century. The only reasonably detailed study published during this period is that of Echeverri (1986) for Parque Nacional Natural "Las Orquídeas". During the last decade, however, the pace of ornithological work in the region has increased. Between 1991 and 1993, the Instituto de Ciencias Naturales of the Universidad Nacional de Colombia (ICN) conducted biological inventories in several municipalities of the department of Risaralda for the Corporación Autónoma de Recursos Naturales y Desarrollo de Risaralda (CARDER). The ornithological surveys were carried out by FGS with help from Sandra Arango and Inés Elvira Lozano. Two species of birds new to science were encountered (Salaman & Stiles 1996, Robbins & Stiles 1999) and several important records were obtained (Stiles 1998, Stiles & Alvarez-López 1995), as well as the range extensions reported here. Between 1999 and 2002, ornithological surveys of several localities in the most unexplored areas in the Andes of the department of Antioquia were conducted by AMC with the help of CDC, JLT, GAL and others (see acknowledgements), for the Corporación Autónoma Regional del Centro de Antioquia (CORANTIOQUIA). In addition to new information on the distribution and conservation status of several threatened species (Cuervo & Toro 2001, Toro & Flórez 2001), these surveys produced new data on the distribution of several species of the W Andes. In this paper, we have compiled all the records obtained during the above-mentioned surveys that represent substantial extensions of distribution ranges reported in recent general works (Echeverri 1986, Fjeldså & Krabbe 1990, Hilty & Brown 1986, Isler & Isler 1999, Negret 1994, Ridgely & Tudor 1989, 1994, Stotz *et al.* 1996) or suggested by museum specimens housed at the ICN and other major Colombian ornithological collections. We consider substantial range extensions those records that represent (1) the first known occurrences of the species in the W Andes, (2) the first records for the Pacific (west) or Cauca Valley (east) slope if previously recorded in the cordillera, or (3) extensions of over *c.* 100 km distance and/or *c.* 200 m elevation along one of the slopes. We analyze each slope separately because although the W Andes are relatively low in many areas, high elevations dominated by paramo vegetation at the ridgeline make the habitat discontinuous between slopes, even for high-Andean forest species. The Pacific and Cauca Valley slopes represent distinct Endemic Bird Areas (Stattersfield *et al.* 1998) and biogeographic provinces (Hernández-Camacho *et al.* 1992), and bird distributions in Colombia can vary considerably between slopes (see Remsen & Graves 1995), making new records for each slope especially significant. We present other records that represent less dramatic but important range extensions in a separate section at the end of the article. Complete lists of all the species recorded during surveys are available upon request from the authors. All specimens were deposited in the collection of the ICN.

Study Sites

A. Pueblo Rico. Town and municipality seat, located on the W slope of the W Andes *c.* 5 km NW of the crest (5°13'N, 76º02'W), at an elevation of 1,570 m. Field work was conducted in the surrounding areas (1,500-1,800 m), which contained a mosaic of pastures and cultivated areas on gentle slopes, patches of second growth scrub and woodland, and several patches of remnant, moderately disturbed forest on steep slopes. Also surveyed were the deep valleys of the Quebrada Yarumal and the Quebrada Rionegro, which included narrow strips of woodland along the streams, mostly second growth woodland and small pastures and croplands on flat areas near the streams, and high-grade to nearly intact forest on steep canyon slopes. FGS worked this area 8-19 April 1991, S. Arango between 19 and 30 September 1991.

B. Mistrató. Town and municipality seat on the E slope of the W Andes (5°18'N, 75°53'W, 1,525 m). Fieldwork was conducted mainly in shade coffee plantations and patches of second-growth woodland nearby (1,500-1,600 m), and in a patch of remnant, disturbed forest (Vereda Río Arriba, c. 1,700 m) by FGS between 28-30 March and 5-8 April 1992.

C. El Empalado. A large patch of forest (>100 ha) on the crest of the W Andes *c.* 8 km N of Mistrató (5º22'N, 75º53'W, 1,600-1,850 m), mostly above the main road from Mistrató to San Antonio del Chamí. Near the road the forest has been selectively cut and some areas are dominated by second growth woodland. Above *c.* 1,800 m the slopes are much steeper and the forest is nearly intact, continuing beyond the elevations studied to the adjacent mountaintops at over 2,000 m. FGS worked this area on 31 March and 1-4 April 1992. This forest was much wetter than that at Río Arriba, with mist and clouds during most of the mornings; larger trees supported a heavy growth of moss and epiphytes.

***D. Santa Cecilia*.** A small town in the western foothills of the W Andes overlooking the upper Río San Juan, *c.* 20 km NW of Pueblo Rico (5°21'N, 76°09'W). Fieldwork was conducted in the stony, brushy pastures near the river at *c.* 300 m, areas of selectively logged, very wet forest on slopes facing the town between 400 and 700 m, and in relatively intact forest on the steep slopes of the Alto Amurrapá, a large hill (to *c.* 1,050 m) *c.* 2.5 km S of the town. I. E. Lozano observed here 8-19 April 1991, FGS 19 - 30 September 1991.

***E. Alto de Pisones*.** A cloud-forested ridge on the W slope of the W Andes on the S side of the Caramanta massif that forms the border between Risaralda and Antioquia (5°25'N, 76°02'W). Fieldwork was conducted mainly along the horse trail between the hamlet of Geguadas and the mining settlement of Puerto Oro and along the Cuchilla Gebanía ridge, between 1,400 and 1,850 m. The area is mostly covered with pristine to lightly disturbed cloud forest above 1,500 m; below this a mosaic of forest and second growth of various ages exists due to shifting cultivation by the Embera Indians. The area and its vegetation are described in more detail by Salaman & Stiles (1996). FGS worked here 28 May-8 June 1992 and 12-17 April 1993; S. Arango and I. E. Lozano observed and netted here on 2-4 October 1994.

***F. La Linda*.** Located on the E (Cauca Valley) slope of the W Andes, *c.* 8 km NE of the municipality of Jardín, on the SW of the department of Antioquia (5°38'N, 75°48'W, 2,400-2,700 m), this reserve encompasses 530 ha protecting the Quebrada La Linda watershed. The area is a mosaic of recently abandoned pastures, young and old second growth, and an important extension of continuous primary forest. Most forested areas have been strongly disturbed by logging and palm shoot harvesting in the past. Forests are characterised by a heavy epiphytic load and dominance of palms, with *Wettinia kalbreyeri* and *Prestoea acuminata* being notably abundant. Other numerically important trees include *Billia* (Hippocastanaceae), *Croton* and *Alchornea* (both Euphorbiaceae), *Schefflera* (Araliaceae), and several species of Melastomataceae, Rubiaceae, and Lauraceae. AMC, CDC, GAL, JLT, A. Cortés, and A. M. Castaño conducted bird surveys on 3-7 January 2001 and 13-14 April 2002.

***G. Las Nubes*.** A reserve located in SW Antioquia *c.* 4 km NE of the town of Jericó on the E (Cauca Valley) slope of the W Andes (5°48'N, 75°48'W, 1,600-2,250 m). Rocky outcrops in the lower part of the reserve have largely deterred forest clearance for cattle raising and coffee cultivation, and the *c.* 180 ha forest remnant has received little human intervention. Forests are characterised by large canopy trees reaching over 20 m in height and 1m diameter, especially in areas of gentle slopes. Plant species are typical of the northern Andes, with dominance of the Rubiaceae, Melastomataceae, Lauraceae, and Clusiaceae. *Geonoma* (Palmae), *Palicourea* (Rubiaceae), *Persea* (Lauraceae), *Ficus* (Moraceae), and *Cyathea* (Cyatheaceae) are some of the most abundant plants. Ornithological work by AMC took place between 2,200-2,400 m on 16-19 September 2000.

H. La Noque. A large block of forest (> 700 ha) located on the E slope of the W Andes, W Antioquia, *c.* 11 km from the municipality of Caicedo (6°23'N, 76°01'W, 2,400-2,800 m). Forests are covered by mist during most of the year due to condensation of the warm air currents that rise from the Cauca Valley, promoting high relative humidity and profuse growth of epiphytes such as mosses, bromeliads, ferns, aroids, and orchids. The forests were subject to strong intervention in the past, mainly for firewood and timber extraction. Lauraceae, Melastomataceae, Rubiaceae, and Ericaceae are the dominant plant families. Some of the most abundant plant genera are *Quercus* (Fagaceae), *Croton* and *Alchornea* (Euphorbiaceae), *Clusia* (Clusiaceae), *Weinmannia* (Cunnoniaceae), *Freziera* (Theaceae), *Roupala* (Proteaceae), , and *Persea* (Lauraceae). Bird surveys took place between 2,400-2,600m on 17-20 November 2000 by AMC.

The location of these and other localities mentioned in the text are illustrated in Figure 1.

Species Accounts

SCALY-NAPED PARROT *Amazona mercenaria*

Flocks were observed flying over forest canopy and along ravines at La Noque on 18 and 20 November 2000. Also, a number of square-tailed parrots observed on 6 January 2001 by JLT and Alex Cortés at La Linda were likely this species. Previously unrecorded in the W Andes N of Valle, these records represent a *c.* 280 km northerly range extension in this cordillera.

WHITE-CAPPED PARROT *Pionus seniloides*

A group of 7 individuals was observed on 13-14 April 2002 at 2,450 m at La Linda (AMC). In addition, a pair was photographed while perching beside a hole on a dead trunk, presumably a nest cavity. These are the first records of this nomadic parrot for the entire W Andes.

COMMON POTOO *Nyctibius griseus*

Single individuals were heard singing at La Linda at 2,400 m elevation on the nights of 3 and 5 January 2001. Although this common species is widely distributed in Colombia at low and mid-montane elevations, there are few records above 1,900 m (but see Alvarez-Rebolledo 2000).

LYRE-TAILED NIGHTJAR *Uropsalis lyra*

A male was observed by flashlight before dawn on 2 April 1992 sallying for passing insects from a snag *c.* 8 m high at the edge of tall forest by a roadside at El Empalado. No previous records in the W Andes N of Valle (Pance on the E slope, located *c.* 220 km S of El Empalado).

CHESTNUT-COLLARED SWIFT *Streptoprocne rutila*
Flocks were commonly encountered together with White-collared Swifts *S. zonaris* at Las Nubes on 17 and 18 September 2000, at La Noque on 18 and 19 November 2000, and at La Linda on 13 April 2002 (AMC); also seen on several occasions over Pueblo Rico, El Empalado and Alto de Pisones (FGS). Although this species is common at mid-montane elevations throughout its range in Colombia, these are the first records for the northern portion of the W Andes.

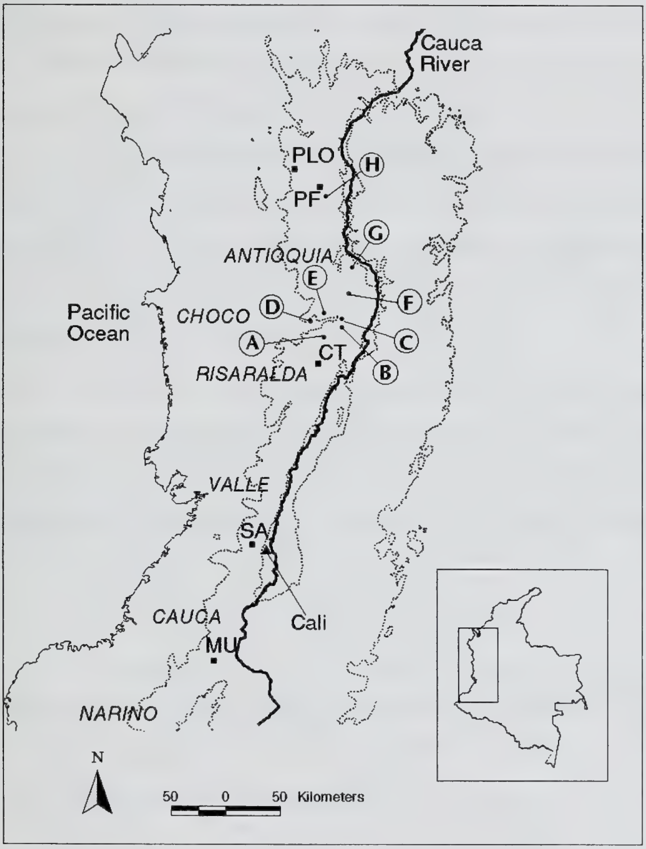

Figure 1. Map of Western Colombia showing the location of study sites (encircled letters) and other mentioned localities. The dotted line indicates the 1,000-m contour line, which outlines the W and C Andes, separated by the Cauca River. Capitalized italic titles show the location of departments in the W Andes (boundaries not shown). Study sites: A. Pueblo Rico, B. Mistrató, C. El Empalado, D. Santa Cecilia, E. Alto de Pisones, F. La Linda, G. Las Nubes, H. La Noque. Other localities mentioned in the text: MU = Munchique, SA = San Antonio, CT = Cerro Tatamá, PF = Páramo de Frontino, PLO = PNN Las Orquídeas.

CHAPMAN'S SWIFT *Chaetura chapmani*

Two were captured, one collected, out of a mixed flock of swifts circling low over Alto Amurrapá on 29 September 1991; several seen on at least four occasions flying low over forested valleys at Alto de Pisones in both June 1992 and April 1993. The specimen from Alto Amurrapá, representative of the nominate race (cf. Marín 1997), had small gonads (left testis 4 mm) and was moulting. Few records exist for this swift in Colombia; in the W Andes it was previously known only from the extreme N end and from above Cali, Valle. However, these records evidently pertain to the race *viridipennis,* an austral migrant that may best be considered a separate species (Marín 1997). It seems probable that *C. chapmani* breeds in the region, which is noteworthy given that Marín (1997) noted that there was uncertainty regarding the existence of a resident population in NW South America.

GREEN-FRONTED LANCEBILL *Doryfera ludoviciae*

One individual was observed at Río Arriba above Mistrató on 6 April 1992, foraging at an epiphytic ericad (cf. *Psammisia*); another was seen at La Linda foraging on flowers of *Satyria breviflora* (Ericaceae) on 5 January 2001, and an adult was captured the next day in a forest edge at 2,550 m. Previously known from the eastern slope of the W Andes only N to Cali (*c.* 250 km S of La Linda), though present the length of the Pacific slope from Parque Nacional Natural (PNN) Las Orquídeas southward.

GREEN VIOLETEAR *Colibri thalassinus*

Observed once at Río Arriba above Mistrató (FGS), once at La Noque (AMC) and recorded in numbers daily at La Linda, where birds were found singing incessantly from exposed perches during most of the day. On 6 January 2001 one individual was captured and photographed in a mist net set in a forest edge. Previously recorded in the W Andes N only to Valle; may be restricted to the E slope, since it was not seen at similar elevations in wetter forests on the divide (El Empalado) or the W slope (Pisones).

FAWN-BREASTED BRILLIANT *Heliodoxa rubinoides*

An adult male with heavily worn plumage was captured and photographed within old secondary forest at La Noque on 18 October 2000 (AMC). This uncommon hummingbird had been recorded in the eastern slope of the W Andes only in Valle (*c.* 300 km S of La Noque) and in the western slope in Antioquia.

BUFF-TAILED CORONET *Boissonneaua flavescens*

We observed one individual in logged primary forest at La Linda on 5 January 2001. Although the species is known from the Pacific slope of the northern W Andes, there are no previous records from the E slope N of Valle; this represents a northerly extension of *c.* 250 km along the E slope.

TOURMALINE SUNANGEL ***Heliangelus exortis***

Observed and captured in old secondary forest at La Noque on 19 November 2000. This hummingbird is known only from scattered localities in the W Andes including the Pacific slope in Antioquia, but had not been recorded in the E slope N of Valle (*c*. 300 km S of the study site).

MOUNTAIN VELVETBREAST ***Lafresnaya lafresnayi***

An adult male was collected in a forest edge on 6 January 2001 at La Linda and a female was observed on 14 April 2002 at the same site. The species was known in the W Andes only from Nariño and Cauca (*c*. 370 km S of La Linda) and one locality in the Pacific slope of Antioquia.

WEDGE-BILLED HUMMINGBIRD ***Schistes geoffroyi***

One bird was observed piercing the bases of *Heliconia* and *Columnea* flowers to rob nectar near the Quebrada Yarumal near Pueblo Rico and a male and female were collected in a wooded ravine above the town on 12 April 1991. These represent the northernmost records of the race *albogularis*, previously recorded N only to Valle and sometimes considered a species distinct from nominate *geoffroyi.*

LONG-TAILED SYLPH ***Aglaiocercus kingi***

Several individuals were observed by AMC at La Noque on 17 and 18 November 2000. At La Linda, we observed both males and females daily along forest borders, often visiting flowers of *Palicourea* (Rubiaceae). Two males were captured (one collected) along a forest edge on 6 January 2001. Previously known in the W Andes only from Nariño to Valle and from a single locality in Antioquia, N of our study sites. It is noteworthy that this species was not recorded on the W slope or crest of the W Andes in Risaralda; in all such sites the related *A. coelestis* was abundant.

PURPLE-THROATED WOODSTAR ***Philodice mitchelli***

An immature male was collected on a scrubby slope above Santa Cecilia on 23 September 1991. An adult male was observed on several occasions perched at the tip of a roadside tree overlooking a coffee plantation near Mistrató (FGS). These represent the northernmost records of this species and the first N of Valle.

TOUCAN BARBET ***Semnornis ramphastinus***

Common to abundant at Alto de Pisones, where several groups of 4-8 birds could be seen or heard daily in forest above *c*. 1500 m (FGS). This near-threatened species (BirdLife International 2000) had not been previously reported N of Valle, so it is encouraging to find a healthy population well beyond the previously known range limits.

GRAYISH PICULET *Picumnus granadensis*
Fairly common at Santa Cecilia (three captured, male collected), Mistrató and San Antonio de Chamí (FGS). Previously known from Pacific slope only in dry, rain-shadow valleys like that of the Río Dagua-Calima; appears to be invading this slope following deforestation along roads crossing low passes from the Cauca Valley.

CRIMSON-MANTLED WOODPECKER *Piculus rivolii*
Recorded at La Noque on 17 and 18 November 2000 (AMC) and heard and observed daily at La Linda (photographs). It was found frequently with mixed-species flocks, generally in pairs; on 13 April 2002 a nest under construction was found at La Linda. The species was unknown from the W Andes between Valle and PNN Las Orquídeas.

TYRANNINE WOODCREEPER *Dendrocincla tyrannina*
Observed and tape-recorded at Las Nubes on 17 November 2000 (AMC). Also, one individual was observed briefly at very close range while foraging in the forest midstory at La Linda on 4 January 2001. This patchily distributed species had been recorded previously on the Pacific slope of Antioquia (Páramo de Frontino, PNN Las Orquídeas) and Risaralda (Cerro Tatamá) but there were no records in the eastern slope of the W Andes N of Cauca (Munchique, which is more than 350 km S of Las Nubes).

BROWN-BILLED SCYTHEBILL *Campylorhamphus pusillus*
One individual was observed as it foraged in the lower part of a moss-covered trunk in closed-canopy forest at *c.* 2,500 m elevation at La Linda on 6 January 2001. The species was previously known to occur in the W Andes mostly along the Pacific slope from NW Antioquia southwards. This record confirms its occurrence on the Cauca Valley slope and represents an altitudinal extension of *c.* 300 m upwards.

PEARLED TREERUNNER *Margarornis squamiger*
Pairs or small groups were commonly encountered accompanying mixed-species flocks at La Linda. The species had not been recorded on the E slope of the W Andes, where it was known only from localities in NW Antioquia and Cauca.

RUSTY-WINGED BARBTAIL *Premnornis guttuligera*
Four were captured (an immature male collected) at Las Nubes on 18 September 2000 (AMC). This is the first record of the species for the E slope of the W Andes. On the Pacific slope, it has been recorded in NW Antioquia, Risaralda (found by FGS at Alto de Pisones), Valle and Nariño.

FLAMMULATED TREEHUNTER *Thripadectes flammulatus*
Single birds (possibly the same individual) were observed foraging in dense forest understory at La Linda on 4 and 6 January 2001. Previously known in the W Andes only from the Pacific slope in Antioquia and from Valle and Cauca (more than 200 km S of La Linda).

STRIPED TREEHUNTER ***Thripadectes holostictus***

One individual, observed from close range in dense understory at Las Nubes on 17 September 2000 (AMC), represents a substantial range extension for this patchily distributed species, previously known in the W Andes N only to Valle.

PACIFIC TUFTEDCHEEK ***Pseudocolaptes johnsonii***

Uncommon at Alto de Pisones, where usually seen accompanying mixed-species flocks in the lower canopy, rummaging in bromeliads and tufts of moss. One adult male collected 2 June 1992. Not previously recorded N of Valle.

UNIFORM ANTSHRIKE ***Thamnophilus unicolor***

Infrequently heard (tape-recorded) at Las Nubes on 18 September 2000 and observed in tall secondary forest at La Noque on 18 November 2000 (AMC); common at Alto de Pisones, also seen at El Empalado (FGS). Formerly known in the W Andes only from the Pacific slope in NW Antioquia and from Valle, Cauca and Nariño.

CHESTNUT-NAPED ANTPITTA ***Grallaria nuchalis***

One individual heard singing close to a forest edge at 2,450 m at La Linda on 14 April 2002 (AMC) represents the first record of this species for the W Andes. Further fieldwork in the area is necessary to determine whether this new population corresponds to *G. nuchalis obsoleta* (a vocally distinct form that may represent a different species previously recorded only in NW Ecuador; Ridgely & Greenfield 2001) or *G. nuchalis ruficeps*, which occurs in the C and E Andes of Colombia.

SLATE-CROWNED ANTPITTA ***Grallaricula nana***

A single individual was heard and tape-recorded at La Linda on 14 April 2002 (AMC). The species was previously known from both slopes of the W Andes N only to Valle, this records extends its known range *c.* 160 km to the northern sector of the Cordillera.

BLACK-CAPPED TYRANNULET ***Phyllomyias nigrocapillus***

A solitary individual was observed in a forest edge at La Noque on 19 November 2000 (AMC). In addition, one individual was briefly observed in a mixed-species flock at La Linda on 5 January 2001. Previous records in the W Andes are from the W slope in Antioquia and from Valle and Cauca.

ASHY-HEADED TYRANNULET ***Phyllomyias cinereiceps***

An individual was observed accompanying a mixed-species flock along the edge of disturbed forest at Río Arriba, above Mistrató, on 6 April 1992 by FGS. Previously known in the W Andes only N to Valle, this represents a *c.* 170 km northerly range extension in the W Andes.

WHITE-TAILED TYRANNULET ***Mecocerculus poecilocercus***

On 5 January 2001, two individuals were heard calling and then observed sallying for insects while accompanying a mixed flock that moved along a forest edge adjacent to pastures with scattered trees at La Linda. This is the first record of this species in the W Andes N of Cauca.

RUFOUS-BROWED TYRANNULET *Phylloscartes superciliaris*
Single individuals or pairs observed accompanying mixed flocks on several occasions in subcanopy of cloud forest at Alto de Pisones (FGS); a pair joined a throng of small birds mobbing a pygmy owl on 3 June 1992; an adult male was collected on 14 April 1993. These are the first records for the W Andes of this species, which is very little-known in Colombia. Previously recorded only on Cerro Tacarcuna on the Panamá boundary, the Central Andes in Antioquia (Salaman *et al.* 2002), and the Eastern Andes in Santander.

RUFOUS-HEADED PYGMY-TYRANT *Pseudotriccus ruficeps*
Few individuals were heard daily in the forest understory at La Linda. On 6 January 2001, one bird was observed at close range, and an adult male was captured and collected in an area covered by dense *Chusquea* bamboo. Previously recorded in the W Andes only from Valle southward, this extends the known range of the species by *c.* 180 km to the northern sector of the cordillera.

FLAVESCENT FLYCATCHER *Myiophobus flavicans*
Observed regularly, usually singles or pairs with mixed-species flocks, above 1,600 m in forest at Alto de Pisones (FGS). Single birds were observed with mixed-species flocks in the subcanopy of old secondary forest interior on 17 and 19 September 2000 at Las Nubes (AMC). Also, a pair was observed closely on 6 January 2001 while foraging in the forest subcanopy at La Linda. This species is fairly common throughout the Colombian Andes, but had not been recorded previously N of Valle in the W Andes except for a sighting in PNN Las Orquídeas.

HANDSOME FLYCATCHER *Myiophobus pulcher*
Pairs or small family groups were observed on four occasions accompanying mixed-species flocks in midlevels and subcanopy of cloud forest and along the Alto Gebanía ridge at Alto de Pisones in early June, 1992 (FGS). These observations fill a large gap in the distribution of this species in the W Andes, between Valle and NW Antioquia (PNN Las Orquídeas).

YELLOW-BELLIED CHAT-TYRANT *Silvicultrix diadema*
Few individuals were recorded daily at La Linda both in forest edges and in the understory of closed forest. Two individuals were captured (one adult female collected) on 4 January 2001. Except for a sighting in PNN Las Orquídeas, there are no previous records of this species in the W Andes N of Valle (*c.* 180 km S of La Linda).

RUFOUS-TAILED TYRANT *Knipolegus poecilurus*
Solitary birds were observed and tape-recorded on 17 and 18 September 2000 on forest edges and isolated shrubs within pastures at Las Nubes (AMC). This species has a patchy distribution in the highlands of Colombia, and was unknown in the W Andes N of Valle.

PALE-EDGED FLYCATCHER *Myiarchus cephalotes*
Common at La Linda, La Noque and Las Nubes, where we heard, tape-recorded, and observed several individuals daily. At La Linda, one bird was captured, photographed and released in a forest edge on 6 January 2001. Also found to be common on mountain slopes above Pueblo Rico, in taller second growth and forest edges (FGS). In the W Andes, it had been recorded only in NW Antioquia and Valle.

BARRED BECARD *Pachyramphus versicolor*
Uncommon in Risaralda, where single birds or pairs were seen with mixed flocks on several occasions at Pueblo Rico, Mistrató and Alto de Pisones, usually at forest edges (FGS). Also found at La Linda, where one male and a pair were observed with mixed flocks on 5 January 2001 and 13 April 2002, respectively. Previous records in the W Andes are from PNN Las Orquídeas and from Valle southwards.

BLACK AND WHITE BECARD *Pachyramphus albogriseus*
At Alto de Pisones, FGS observed a female accompanying a mixed flock in the subcanopy of mature cloud forest on 1 June 1992; on 3 June he observed a vocalizing pair under similar circumstances on the Cuchilla Gebanía ridge. This species is very poorly known in Colombia, having been recorded in the W Andes only in Nariño.

YELLOW-HEADED MANAKIN *Chloropipo flavicapilla*
Two males (one immature, one adult) were captured and collected at Las Nubes by AMC on 17 and 19 September 2001, respectively. Both were trapped in mist-nets placed in old secondary forest near a ravine. This poorly known restricted-range manakin has a patchy distribution in the C and W Andes of Colombia and Ecuador. The species was previously recorded locally in both slopes of W Andes in Valle and Cauca (Munchique).

CLUB-WINGED MANAKIN *Machaeropterus deliciosus*
Fairly common at Alto de Pisones, where several were mist-netted and an adult male was collected on 1 July 1992 (FGS). A lek of at least 8 males was active in June 1992 and April 1993 at *c.* 1,550 m on the S side of the ridge in disturbed forest adjacent to the horse trail. Not previously recorded N of Valle.

SPILLMANN'S TAPACULO *Scytalopus spillmanni*
Tape-recorded at La Linda on 14 April 2002 (AMC, identification confirmed by N. Krabbe). Previously known in Colombia only from the Central Andes and the Pacific

and Amazonian slopes in Nariño (Krabbe & Schulenberg 1997, N. Krabbe, pers. comm.), this record represents a major northerly range extension of more than 600 km to the northern sector of the W Andes.

***Scytalopus* sp.**
A *Scytalopus* tapaculo was tape-recorded and collected by FGS at Alto de Pisones on 6 June 1992; its song consisted of an extremely long-drawn-out series of trills that most closely approached that of *spillmanni* as described by Krabbe & Schulenberg (1997). However, upon hearing the recording and examining the specimen, N. Krabbe suggested that the bird might represent an undescribed species. More recordings and specimens are necessary to assess the taxonomic status of this tapaculo, which was fairly common on slopes (where usually in dense tangles of old treefalls) and in dense, bamboo-choked ravines between 1,450 and 1,700 m at Pisones. Along ridgetops and at higher elevations it was replaced by the Nariño Tapaculo *S. vicinior* (also tape-recorded and collected; identification confirmed by N. Krabbe), which was also found at El Empalado.

OCELLATED TAPACULO *Acropternis orthonyx*
One individual was tape-recorded and then observed closely after playback in a thicket of *Chusquea* bamboo at La Linda on 14 April 2002 (AMC). This is the first record of this little known species for the W Andes.

SEPIA-BROWN WREN *Cinnycerthia olivascens*
A group of *c.* 6 individuals was seen on 6 January 2001 and another was heard on 14 April 2002 at La Linda while moving noisily in thick bamboo-laden forest understory. Although previously recorded in the Pacific slope of the W Andes in scattered localities between NW Antioquia (PNN Las Orquídeas) and N Valle, this is the first confirmed record for the E slope. Based on two specimens collected at La Ilusión, Río Urrao (Antioquia), Brumfield & Remsen (1996) suggested that the species also occurred on the E slope of the cordillera. However, judging by the date of collection and the elevation on the specimen's labels, the correct locality for these is undoubtedly Hacienda La Ilusión (which lies on the Pacific slope), as opposed to La Ilusión, a lowland site on the west bank of the lower Cauca River (see Paynter 1997).

CHESTNUT-BREASTED WREN *Cyphorhinus thoracicus*
Uncommon at Alto de Pisones, where pairs and family groups were occasionally seen in dense, tall understory vegetation inside closed forest. FGS tape-recorded a male singing on 17 April 1993; heard much less frequently in June 1992. Previously unrecorded in the W Andes between Valle and PNN Las Orquídeas.

PALE-EYED THRUSH *Platycichla leucops*
Observed twice at Alto de Pisones in the subcanopy during early June 1992 (FGS); an adult male was collected on 4 June on the Cuchilla Gebanía. This species had not been previously recorded N of Valle in the W Andes.

PLUMBEOUS SEEDEATER ***Sporophila plumbea***

A pair was observed twice with a mixed flock (*S. minuta, S. corvina, S. nigricollis,* and *Volatinia jacarina*) feeding on seeding grasses in a brushy pasture along the Río San Juan below Santa Cecilia on 24 September 1991 (FGS). The pale slate grey colour of the male, with white belly, eyespot and speculum and dusky bill, eliminated the heavier- and yellow-billed *S. intermedia.* This species had been recorded twice on the Caribbean slope in N Colombia but otherwise was previously unknown W of the Eastern Andes; this is the first record for the Pacific slope. The records of the Ruddy-breasted Seedeater *S. minuta* are also among the first on this slope in Colombia, and highlight yet again the capacity of many open-country birds to move rapidly over considerable distances into new areas when forest barriers are removed (cf. Stiles *et al.* 1999).

WHITE-CAPPED TANAGER ***Sericossypha albocristata***

A group was tape-recorded while calling from the canopy of forest edge at La Noque on the mornings of 18 and 19 November 2000 (AMC). Also recorded at La Linda, where one bird was observed in a semi-open area on 18 December 2000 (JLT), and a group was seen and tape-recorded on 13 April 2002 (AMC). These are the first records in the W Andes of this local and erratic species with poorly known distribution.

GREY-HOODED BUSH-TANAGER ***Cnemoscopus rubrirostris***

Recorded daily La Linda, where it was one of the most common birds in mixed-species flocks. Pairs or small groups occupied the middle levels of the forest, often sallying to catch insects. This record represents another locality of its patchy distribution along the W Andes, where it was known from NW Antioquia (PNN Las Orquídeas) and Cauca.

BLACK-CAPPED HEMISPINGUS ***Hemispingus atropileus***

Commonly encountered with mixed species flocks at La Linda, where three individuals were captured on 6 January 2001. We collected an adult female and a male in breeding condition. This locality represents a range extension from the known populations in the Pacific slope of the W Andes in NW Antioquia and Cauca, and the first record for the E slope of the Cordillera.

OLEAGINOUS HEMISPINGUS ***Hemispingus frontalis***

One individual with a mixed flock and a small group moving along a forest border were observed at La Linda on 5 January 2001 and 14 April 2002, respectively; recorded previously only in two disjunct regions of the W Andes: NW Antioquia and Cauca.

BLACK-EARED HEMISPINGUS ***Hemispingus melanotis***

One individual was observed in detail at La Linda while joining an understory flock together with other tanagers and warblers along a forest edge covered by *Chusquea* bamboo on 14 April 2002 (AMC). This observation represents the first record of the species for the W Andes.

RED-HOODED TANAGER *Piranga rubriceps*
A pair and a group of 4-5 birds were recorded on 5 and 6 January 2001 foraging in the upper forest canopy at La Linda. Contrary to the usual behaviour of the species (Isler & Isler 1999) we found it joining mixed-species flocks. Also, a group of 3 birds was observed (S. Arango) on 25 September 1991 along the edge of a disturbed forest near Pueblo Rico. The only previously known locality in the W Andes N of Valle lies on the Pacific slope of NW Antioquia.

FAWN-BREASTED TANAGER *Pipraeidea melanonota*
A singing male was observed in a tree top in second growth along Quebrada Yarumal near Pueblo Rico on 17 April 1991 (FGS). A bird was seen in the top of a tree near the forest border at Las Nubes on 17 September 2000 (AMC) and one male was observed in the upper level of the forest at La Linda following a mixed flock on 5 January 2001. This tanager had been recorded in the W Andes only on the Pacific slope in Valle and Nariño.

THICK-BILLED EUPHONIA *Euphonia laniirostris*
One male was observed along a forest edge adjacent to pastures on 4 January 2001 at La Linda. The elevation at which the bird was found (*c.* 2,400 m) is noteworthy, as the species usually occurs only up to 1,800 m, occasionally to 2,200 m. This record is not altogether surprising given that many non-forest lowland species are known to expand their altitudinal ranges upward into the Andes following deforestation (Renjifo 1999).

YELLOW-COLLARED CHLOROPHONIA *Chlorophonia flavirostris*
Uncommon at Alto de Pisones, where FGS observed it visiting fruiting melastome trees, usually in the company of other tanagers, along the Cuchilla Gebanía ridge on several occasions in June 1992, and collected an adult male. In April 1993, a pair was observed building a dome-shaped mossy nest with a side entrance, *c.* 8 m up in a crotch of a small dead tree at the edge of a forest clearing at 1,550 m. Previously recorded in the W Andes only in Nariño and Valle.

CHESTNUT-BREASTED CHLOROPHONIA *Chlorophonia pyrrophrys*
We found one male foraging with a mixed-species flock on 5 January 2001 at La Linda. During June 1992, FGS saw this species on several occasions visiting the same melastome trees as the previous species at Alto de Pisones, but the two seemed never to be present simultaneously. Previously known on both slopes of the W Andes from Valle southward, and on the W slope in Antioquia.

Additional Records

The following are some minor range extensions. **Tawny-bellied Hermit** *Phaethornis syrmatophorus:* several individuals recorded in forest edges and within tall forest at Alto de Pisones and La Linda represent a range extension of *c.* 75 km N in the W Andes, from the Cerro Tatamá massif. **Rufous Spinetail** *Synallaxis unirufa:* observed twice in dense thickets of *Chusquea* bamboo at La Linda; previously recorded in the W Andes only from Cerro Tatamá southwards and from PNN Las Orquídeas, these observations fill a *c.* 200 km gap in the species' known range. **Variegated Bristle-tyrant** *Phylloscartes poecilotis:* one individual observed closely and tape-recorded in a mixed-species flock at Las Nubes is the northernmost record for this species in the W Andes, where it was known N only to Risaralda (found at Alto de Pisones). **Black-billed Peppershrike** *Cyclarhis nigrirostris:* several individuals heard and tape-recorded at the three study sites in Antioquia fill a gap in the known distribution of this species in the northern part of the W Andes between Risaralda, where common at El Empalado and Alto de Pisones, and NW Antioquia. **Black-and-white Seedeater** *Sporophila luctuosa:* scattered individuals observed in overgrown pastures, shrubs, and maize crops at La Noque; previously known to occur in the Pacific slope of the W Andes in Antioquia and patchily in the E slope. **Black-winged Saltator** *Saltator atripennis:* observed once at La Noque; previously known to occur on both slopes of the southern W Andes reaching N to the upper Río San Juan (Cerro Caramanta), this is the northernmost record for the species in the W Andes. **Purplish-mantled Tanager** *Iridosornis porphyrocephala:* found commonly at La Linda, which represents the northernmost locality on the E slope for this restricted-range species; occurs mostly in the Pacific slope of the W Andes but it is known to be present also in some areas of the E slope near low passes as at Mampay and Río Arriba, above Mistrató. **Mountain Cacique** *Cacicus leucoramphus:* observed and heard at La Noque and recorded daily in small numbers at La Linda, where two active nests were found on April 2002; these are the first records for the E slope of the W Andes in Antioquia, where it was known N of our study sites in the Pacific slope.

Concluding remarks

The understanding of the distribution and conservation status of the avifauna of the northern sector of the Western Andes remains far from complete despite the 67 records presented here. Undoubtedly, this large number of range extensions reflects the paucity of fieldwork in this region and it is likely that additional surveys will provide many more noteworthy records for the area. As expected based on the lack of study of the northern sector of the cordillera, most of the records we presented are northerly extensions of the range of species that were known from the Central W Andes (N only to Cauca or Valle, where past ornithological studies had focused). However, our surveys also provided the first records for the W Andes for 6 species, and extended the known range of several others to the Pacific or Cauca Valley slope.

The forests of the northern W Andes are important for the conservation of several endemic and/or threatened species such as the Yellow-eared Parrot *Ognorhynchus icterotis*, which was recently recorded in this region (Toro & Flórez 2001). The discovery of a new population of this critically endangered species has spurred efforts to protect it and preserve its habitat, and CORANTIOQUIA has purchased land in forested areas for conservation purposes. Establishment of new reserves in the W Andes of Antioquia will also ensure the protection of populations of the endangered Red-bellied Grackle *Hypopyrrhus pyrohypogaster*, which was found during our surveys at La Linda, Las Nubes and La Noque. The currently unprotected Alto de Pisones represents an important area because of healthy populations of species of conservation concern like Toucan Barbet and Gold-ringed Tanager *Bangsia aureocincta* (Stiles 1998) and poorly known endemics like the Chocó Vireo *Vireo masteri* (Salaman & Stiles 1996). Other little-known birds of this region await careful study to determine the size and health of their populations (e.g., Chestnut-bellied Flowerpiercer *Diglossa gloriossisima*) or their taxonomic status (e.g., Dusky Starfrontlet *Coeligena orina*).

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New birds for Guyana from Mts Roraima and Ayanganna

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Mount Roraima, the legendary mountain at the juncture of Guyana, Venezuela and Brazil, has figured prominently in the history of ornithology in South America. Revered by indigenous people as the "mother of waters", this mountain was the destination of numerous exploratory expeditions, especially in the late 19th and early 20th centuries. Most of the early expeditions to Mt Roraima were undertaken to explore the boundaries and/or biodiversity of Guyana, during the time that it was a British colony. Extensive collections were returned to European, Venezuelan and American museums by intrepid field scientists such as the Schomburgks, Whitely, McConnell, Quelch, Tate, Carter, the Phelps and others (Mayr & Phelps 1967). This material formed the basis for the description of numerous taxa of the endemic highland avifauna of the Pantepui region.

Ironically, many of these highland birds are not actually known to occur within the boundaries of Guyana (Phelps 1938, Snyder 1966, Braun *et al.* 2000), even though they have appeared in several previous accounts of its avifauna (e.g., Cabanis 1848, Chubb 1916, 1921). Because it is much easier to approach Mt Roraima through the savannas on the southwestern slopes than the extensive, continuous forest on the northeastern slopes, all biological expeditions prior to 1971 actually surveyed portions of the mountain that lie in Venezuelan territory. Phelps (1938) highlighted this fact and Snyder (1966) listed 33 bird species that had been collected on or near Mt Roraima, but were not known from Guyana. This gap in knowledge is significant, because several of these birds are restricted to the eastern tepuis and a large proportion of their global ranges may lie within Guyana.

From mid-March to mid-April 2001, we conducted an inventory of the avifauna of the north slope of Mt Roraima to document the presence of the Roraiman avifauna in Guyana. WSP accompanied an entomological expedition to Mt Ayanganna in September 1998, making incidental observations of highland birds. Here we document species encountered on these expeditions that are new to Guyana and/or Mt Roraima.

Background information

The Pantepui region of eastern Guyana, southern Venezuela and northern Brazil is characterized by tall sandstone table mountains, or tepuis, that rise dramatically out of savanna- or forest-covered plains to heights of 1,500-3,000 m. Formed by millions of years of erosion of an ancient uplifted plateau, the tepuis are surrounded by steep, forested talus slopes, often culminating in dramatic pink or red cliffs of 500 m or more. The slopes and summits of the tepuis support a distinctive highland flora and fauna. Because of their isolation from each other and from other highland areas, the tepuis have a high degree of avian endemism at the species and subspecies level. The origins of this endemic avifauna have been the subject of several studies that have been influential in our understanding of processes that generate tropical biodiversity (Chapman 1931, Mayr & Phelps 1967, Cook 1974).

The Pantepui is divided biogeographically into eastern and western subregions by the Río Caroní in southeastern Bolívar, Venezuela (Mayr & Phelps 1967). Many of the eastern tepuis are arrayed along the borders of Guyana with Venezuela and Brazil. While the western and southern bases of these tepuis lie in savanna, the north and east slopes are covered in dense continuous forest due to higher rainfall caused by prevailing, moisture-laden, northeasterly winds. In Guyana, the eastern tepuis are known as the Pacaraima Mountains. At 2,810 m, Mt Roraima is the tallest of the eastern tepuis. Ayanganna lies 90 km east of Mt Roraima, fully within Guyanese territory and surrounded by forest. It is the easternmost tepui over 2,000m.

Although the eastern subregion occupies a much smaller geographic area than the western subregion, avian diversity is greater with several endemic species in the eastern tepuis. This may be due to the higher average elevation of the eastern tepuis and their proximity to one another (Mayr & Phelps 1967, Cook 1974, Willard *et al.* 1991). From a plumage standpoint, the eastern tepui endemics include the most distinctive and highly differentiated tepui birds, such as Red-banded Fruiteater *Pipreola whitelyi*, Rose-collared Piha *Lipaugus streptophorus*, Ruddy Tody-Flycatcher *Todirostrum russatum* and Olive-backed Tanager *Mitrospingus oleagineus*. Although the area in which they occur is largely pristine, all of these birds are of conservation concern due to their small global ranges (Stattersfield *et al.* 1998). Expansion of mining and logging in this region may soon threaten their habitat.

Study sites and methods

We visited Mt Roraima in March and April 2001, near the end of the local dry season. From Kamarang, we ascended the Mazaruni, Kako and Waruma rivers by boat to the highest navigable point (5°29'N, 60°47'W). We then reopened a 26 km trail cut by previous expeditions to the foot of Roraima (Warren 1973). We camped at 800 m (5°17'N, 60°45'W) from 18-27 March and at 1,300 m (5°16'N, 60°44'W) from 28 March-12 April. The 800 m camp was in tall, humid, closed canopy forest that was transitional between the lowland and montane forests of the area. The 1,300 m camp was in epiphyte-laden cloud forest of lower stature and more open canopy. From this camp, we could reach a ridge top with stunted forest at 1,500 m, but a sheer cliff blocked our upward progress beyond that.

At each camp we opened additional trails and surveyed the avifauna with tape recorders, mist nets, and shotguns. We logged c. 60 observer-days at the 800 m camp and c. 90 at 1,300 m. We set c. 30 mist nets at each camp, logging c. 2,200 mist net hrs at 800 m and 3,700 hrs at 1,300 m. We made notes on the habitat, behaviour, breeding condition and feeding ecology of most species encountered. A representative series of specimens for many species, including the first anatomical and genetic samples for several species, are deposited at the US National Museum of Natural History (USNM), University of Kansas Natural History Museum (KUNHM), and the University of Guyana. Tape recordings are deposited at the Macaulay Library of Natural Sounds (MLNS) of the Cornell Laboratory of Ornithology. All work was conducted under research permits issued by the Environmental Protection Agency of Guyana.

WSP accompanied an entomological expedition to Mt Ayanganna (5°24'N, 60°00'W) in September 1998 and photographed mist-netted birds (photos on file at USNM).

Results and discussion

Brief accounts are given below for twenty-six species for which significant new distributional information was gathered on these expeditions. Twenty-four species are new to the Guyana list since the compilation of Snyder (1966). Eight of these (*Otus roraimae*, *Aeronautes montivagus*, *Campylopterus hyperythrus*, *Xenops tenuirostris*, *Todirostrum russatum*, *Knipolegus poecilurus*, *Tangara xanthogastra* and *Atlapetes personatus*) appeared in the list of Braun *et al.* (2000); details for their inclusion are provided here. Twenty-two of the new species for Guyana are documented by physical evidence (specimen, photograph and/or tape recording).

We encountered four species (*Aegolius harrisi*, *Cypseloides phelpsi*, *Aeronautes montivagus*, and *Colibri delphinae*) that were not listed for the highland avifauna of Mt Roraima in the compilation of Willard *et al.* (1991). Omission of a fifth species, *Tangara punctata*, appears to be an oversight, as the species was mentioned by both Chapman (1931) and Chubb (1916). Mt Roraima is the best studied of all tepuis ornithologically and these additions bring its list to 89 species, or 86% of the total Pantepui highland avifauna treated by Willard *et al.* (1991).

Taxa marked with asterisks are new to Guyana since Snyder (1966). Letters in parentheses following the scientific names denote the following: E- endemic species of the Pantepui; EE- endemic species restricted to the eastern tepuis; S- specimen; T- tape recording.

***TEPUI SCREECH-OWL** *Otus roraimae (E, T)*

One or more were heard daily in our 800 m camp on Roraima at dawn and dusk. The species was also heard irregularly at 1,300 m. It was previously known in Guyana from a tape recording made at the Waruma River landing in 1994 (MBR; MLNS 85789) and a specimen (KUNHM 89695) taken in the Acari Mts in 1998.

***BUFF-FRONTED OWL** *Aegolius harrisi (T)*

A single bird sang briefly at 0330 h and 0515 h on 29 March above our tents at the 1,300 m camp on Mt Roraima. Either the same or another individual weakly responded to pre-recorded tape on the early evening of 4 April near the same camp. What was probably a different individual was tape-recorded by CMM on 8 April at 1,450 m. Although there are only two previous records for Pantepui (Cerro Neblina, Willard *et al.* 1991; Auyán-tepui, Barrowclough *et al.* 1997), this largely overlooked species is now known from a number of localities in South America (Konig *et al.* 1999).

TEPUI SWIFT *Cypseloides phelpsi (E, S)*

During clear weather, this swift was seen daily in flocks of 10-300 individuals on Mt Roraima. We recorded it from 500-1,500 m, usually flying high overhead at elevations up to *c.* 2,300 m. Occasional groups came much lower over rivers, forest clearings and savannas to feed. On 18 April, *c.* 30 individuals were seen at close range (< 100 m) over a small savanna at 5°31'N, 60°44'W. At least four of these birds appeared entirely dark in plumage (MBR, CMM). Although Black Swift *C. niger* and White-chinnied Swift *C. cryptus* are known in Guyana (Snyder 1966, Stiles & Negret 1994), we suspect that these all dark birds were juvenile *C. phelpsi*, because they appeared indistinguishable from adjacent adults in size and shape, and immature *C. phelpsi* are reported to lack the chestnut collar (Chantler & Driessens 2000). Three of four adults we collected were in breeding condition, which supports Collins's (1972) supposition that the species breeds at the onset of the rainy season. The only previous specimens from Guyana were collected by Whitely in the Merume Mts in the 1800s (Collins 1972).

***WHITE-TIPPED SWIFT** *Aeronautes montivagus*

This species was observed on two occasions, in small groups of 3-4 birds, at eye level at *c.* 1,500 m on Mt Roraima (MBR, BJO). There were prior Guyana sight records from the Kanuku Mts (Parker *et al.* 1993) and Kaieteur Falls (D. W. Finch, MBR, MJB and CMM, pers. obs.).

***RUFOUS-BREASTED SABREWING** *Campylopterus hyperythrus* (EE, S, T)
This eastern tepui endemic was mist-netted and photographed on Mt Ayanganna by WSP in September 1998. It was fairly common on Mt Roraima from *c.* 1,000 m upwards, becoming common to abundant at 1,300 m and above. The birds used all levels of the forest from undergrowth to canopy, and were especially abundant at flowering trees, with up to 20 individuals noted at one tree. Undoubtedly, the "green and orange humming-bird" filmed by the 1971 expedition to Mt Roraima (Warren 1973, p.63) was also this species.

***SPARKLING VIOLETEAR** *Colibri coruscans*
Two individuals seen at a flowering tree on 9 April by MBR and BJO in broken ridgetop forest at 1,500 m on Roraima constitute our only record. This species is likely more common in the stunted vegetation along the talus slopes at the base of the rock cliffs.

BROWN VIOLETEAR *Colibri delphinae* (S, T)
This species was commonly seen visiting midlevel and canopy flowers and making aerial sallies for insects above 1,000 m on Roraima. Its omission from the Roraima list of Willard *et al.* (1991) appears to be an oversight, as it was mentioned for Roraima by both Chapman (1931) and Chubb (1916). However, the fact that no specimens were taken on Roraima and only three on Mt Duida by major expeditions in 1927 and 1928 (Chapman 1931) suggests that this species may be more common on the humid northern and eastern slopes of Roraima, where we encountered it in relatively large numbers.

***RED-RUMPED WOODPECKER** *Veniliornis kirkii* (S, T)
The species was uncommon from 1,200 m upwards on Roraima, with 1-2 individuals recorded almost daily. Recently fledged young were seen with adults on 30 March (MBR). The species was primarily encountered in the forest canopy and subcanopy, occasionally joining mixed-species flocks.

***WHITE-THROATED FOLIAGE-GLEANER** *Automolus roraimae* (E, S, T)
This endemic was scarce at 800 m but became uncommon above 1,200 m on Mt Roraima. It was found mostly in relatively dense undergrowth but was seen occasionally in the moss-laden subcanopy with mixed-species flocks. Although the species vocalized infrequently, gonads, enlarged and with convoluted oviducts, indicate that breeding had occurred just prior to our visit.

***SLENDER-BILLED XENOPS** *Xenops tenuirostris* (S)
A specimen (USNM 626868) collected from a canopy mixed flock at 1100 m on Mt Roraima on 10 April by MJB was our only record. The bird appeared smaller than Plain Xenops *X. minutus* and moved faster, more like a nuthatch. It responded strongly to squeaking and an imitation of a pygmy owl *Glaucidium* sp. This is the first

specimen record for Guyana, but there have been two prior sight records (Parker *et al.* 1993, Anonymous 1999).

***STREAK-BACKED ANTSHRIKE** *Thamnophilus insignis* (E, S, T)
This species was uncommon from 1,100 m upward on Mt Roraima. It was usually encountered in pairs in the understory, ascending occasionally to the subcanopy. The species was heard vocalizing only occasionally during our stay.

***SCALED ANTPITTA** *Grallaria guatimalensis* (S, T)
Birds were heard infrequently at our 800 m camp on Mt Roraima but above 1,200 m, this species was quite common and sang persistently. As many as 8-10 could be heard per day in the area of our 1,300 m camp, singing from perches ranging from near ground level to >10 m high. We recorded three distinct vocalizations. The most frequent was a long series of low hooting notes with three longer, more emphatic notes in the middle. This song has been recorded throughout much of the range of the species without marked variation (e.g., Krabbe & Coopmans 2000). An uncommon variant of this song was higher-pitched and somewhat *Otus*-like. The third vocalization, given frequently at dawn, was a shorter, simpler, also *Otus*-like series. A very similar alternate vocalization appears to be given by the Moustached Antpitta *G. alleni* (L. Renjifo and MJB, unpublished data) and may perhaps be expected from other members of the *guatimalensis* complex.

***TEPUI ANTPITTA** *Myrmothera simplex* (E, S, T)
This endemic was recorded as low as 700 m but was most common above 1,200 m on Mt Roraima. The species sang frequently in the morning and evening; both its song and low, chuckling alarm calls were similar to those of its lowland congener, the Thrush-like Antpitta *M. campanisona*. Birds stayed within 1-2 m of the ground and responded vigorously to playback often by running rather than hopping in short spurts of 2-3 m. A nest with eggs, discovered at 700 m on 24 March by BRB and MBR, will be described elsewhere.

***SLATE-CROWNED ANTPITTA** *Grallaricula nana* (S, T)
Although seen infrequently, this species was captured almost daily in mist nets at 1,300 m on Mt Roraima. It was never heard singing but individuals flushed along the trail gave single-noted calls.

***CHAPMAN'S TYRANNULET** *Phylloscartes chapmani* (E, S, T)
This little-known flycatcher was common in the forest mid-story and subcanopy from 900 to 1,500 m on Mt Roraima. It was mostly seen in pairs or family groups, often with mixed flocks. On several occasions, birds were seen quickly raising one wing to a fully open, vertical position where it was held for perhaps a second before closing. This distinctive behaviour occurs in several other tyrannid genera.

***BLACK-FRONTED TYRANNULET** *Phylloscartes nigrifrons* (E, S, T)
This endemic was considerably less common on Mt Roraima than its congener, *P. chapmani.* Although the first specimen was taken from a midstory mixed-species flock at 800 m, we found it mostly above 1,000 m, where it was uncommon inhabitant of the canopy and subcanopy.

***RUDDY TODY-FLYCATCHER** *Todirostrum russatum* (EE, S, T)
This eastern tepui endemic was mist-netted and photographed by WSP on Mt Ayanganna in September 1998. It was fairly common in the forest undergrowth on Mt Roraima from 1,200 m upward. The species was typically found in pairs, often giving a short series of ticking notes.

***RUFOUS-TAILED TYRANT** *Knipolegus poecilurus* (S)
This species was uncommon around tree falls and in stunted ridge crest forest from 1,300 m upward on Mt Roraima. The only previous records from Guyana are from the Acari Mts in the extreme south in 1998 (USNM and KUNHM, unpublished data).

***TEPUI WREN** *Troglodytes rufulus* (E, S, T)
With the single exception of a pair at *c.* 1,400 m, all other individuals encountered were in stunted vegetation along a knife-like ridge at 1,500 m on Mt Roraima. Presumably, it is more common in the more extensive, stunted vegetation along the talus slopes at the base of the rock cliff. Pairs were encountered in dense undergrowth, creeping through tangles, on the ground, or over rocks and logs. The song, which is simple, high-pitched, and thrush-like, seems atypical for a *Troglodytes*.

***YELLOW-LEGGED THRUSH** *Platycichla flavipes* (T)
We had only one definite record of this forest thrush on Mt Roraima. A bird was tape-recorded at the same site at 1,000 m on 5, 6 and 10 April (CMM, MJB). The singing bird was seen in the subcanopy by BJO on 6 April and diagnostic field marks were noted (all dark plumage and irides, yellow bill, feet and eyering). None were mist-netted, although we were within the elevational range given for the bird in the tepuis by Meyer de Schauensee & Phelps (1978).

***GREATER FLOWER-PIERCER** *Diglossa major* (EE, S, T)
This gigantic flower-piercer was fairly common in the cloud forest canopy and subcanopy from 1,200 m upward on Roraima. Presumed pairs and single birds were observed in mixed-species flocks and visiting flowering and fruiting trees. On several occasions individuals were seen making aerial sallies for insects above the canopy flowering trees and once in a mid-level forest light gap. The spectacular size of this *Diglossa*, 1.5 to 3 times as large as any of its congeners (Isler & Isler 1987), and the fact that it has a small and isolated range in the eastern tepuis, suggests that it is an example of insular gigantism. The Tepui Wren, and tepui subspecies of Great

Antshrike *Taraba major duidae*, Rufous-collared Sparrow *Zonotrichia capensis macconnelli* and Wedge-tailed Grass-Finch *Emberizoides herbicola duidae* are other Pantepui endemics that may exhibit the same phenomenon.

***WHITE-WINGED TANAGER** *Piranga leucoptera* (S)
Only two pairs of this tanager were encountered, both at 1,300 m in the forest canopy on Mt Roraima. One pair was visiting a flowering tree. A male and a female specimen (USNM 626850 and 626849) document these first records for Guyana.

***SPECKLED TANAGER** *Tangara guttata* (S)
One specimen (USNM 626866), mist-netted in stunted ridgetop forest at 1,500 m on Mt Roraima on 9 April, was our only record and the first for Guyana. This is often a common species in the foothills of the Andes and Central America and it may be more common in forest edge habitats (Meyer de Schauensee & Phelps 1978), which were scarce on our route. However, there is some indication that it varies widely in abundance in the Pantepui region. At collecting stations where it was noted by Chapman (1931), 1, 1 and 38 individuals were taken at three stations on Mt Roraima and 1 was taken on Mt Duida. Only one specimen and one sighting were recorded on two expeditions to Cerro de la Neblina (Willard *et al.* 1991). Yet it is reported to be common on Cerro Tamacuarí (Barrowclough *et al.* 1995) and Cerro Guaiquinima (J. Perez-Eman, pers. comm.).

***YELLOW-BELLIED TANAGER** *Tangara xanthogastra* (S)
This species was fairly common in pairs and small groups in the forest canopy on Mt Roraima from 1,100 m upwards. The only previous Guyana record was a single bird collected from a pair seen in 1996 in the Iwokrama Mts (Anonymous 1999).

***TEPUI BRUSH-FINCH** *Atlapetes personatus* (E, S, T)
This highly polymorphic finch was mist-netted and photographed on Mt Ayanganna by WSP in September 1998. It was uncommon in dense cloud forest undergrowth from 1,200 m upwards on Mt Roraima. We usually found them in pairs that infrequently sang duets.

***SLATY FINCH** *Haplospiza rustica*
A subadult male of this rare finch was mist-netted and photographed on Mt Ayanganna by WSP in September 1998. Single specimens from Chimanta-tepui and Neblina are the only previously published Pantepui records (Willard *et al.* 1991).

With the data presented herein, only 11 of the 33 Roraiman species listed by Snyder (1966) remain unrecorded or inadequately documented from Guyana (Braun *et al.* 2000). These are Band-tailed Pigeon *Columba fasciata*, Band-winged Nightjar *Caprimulgus longirostris*, Roraiman Nightjar *Caprimulgus whitelyi*, Sharp-tailed Streamcreeper *Lochmias nematura*, White-throated Tyrannulet *Mecocerculus* *leucophrys*, Green-backed Becard *Pachyramphus viridis*, Tawny-headed Swallow *Alopochelidon fucata*, Lawrence's Thrush *Turdus lawrenci*, Blue-hooded Euphonia *Euphonia musica*, Paramo Seedeater *Catemenia homochroa* and Slate-colored Seedeater *Sporophila schistacea*. Two other species not listed by Snyder belong in the same category: Great Elaenia *Elaenia dayi* and Tepui Goldenthroat *Polytmus milleri* (Meyer de Schauensee & Phelps 1978, Willard *et al.* 1991). With the possible exception of *Turdus lawrenci*, a lowland species, it seems likely that all these birds will ultimately be found in Guyana as the higher elevations and specialized microhabitats of the Pacaraima Mts are fully explored.

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Notes on some genera and subgenera of rails (Rallidae)

by John Penhallurick

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For some years I have been compiling a database of the "unabbreviated" first occurrence of every generic, subgeneric, specific and subspecific name applied to birds since Linnaeus (1758), but also including pre-Linnean names, and early vernacular names where these served as the basis for later scientific names. I mention "unabbreviated" because a major problem in many nineteenth-century works is the use of abbreviations for both the names of authors and the titles of both monographs and periodicals. For example, "Bp. *Consp. Vol. Zygod.* p. 7 (1854)" or "Forst. *Descr. Anim.* p. 151. (1844)". The former is: Bonaparte, 1854, "Conspectus Volucrum Zygodactylorum" in *Ateneo Italiano*, 2, p. 7; and the latter: J. R. Forster, 1844, *Descriptiones animalium quae in itinere ad Maris australis terras per annos 1772,1773,1774 suscepto collegit*, ed. M. C. H. Lichtenstein, p. 15. While working through the Rallidae, I became aware of a number of problems relating to the availability and application of several generic and subgeneric names, including several incorrect type statements. As Steven Gregory has accurately stated, in a review of an earlier draft of this paper: "The Rallidae is a veritable minefield for the unwary, the more so as it is very often difficult to ascertain with confidence that when names are used by nineteenth century authors, they are in fact referring to the same taxa." In addition to the historical problems, recent work, including studies utilising DNA sequencing, suggests that there should be some significant realignments of species among genera. Accordingly, this paper discusses the availability, typification and validity of a number of generic and subgeneric names among the Rallidae. It also proposes a new name in relation to the genus *Sarothrura*.

Corethrura G. R. Gray, 1846 and *Sarothrura* Heine & Reichenow, 1890

Corethrura is often encountered in nineteenth-century synonymies as a generic name relating to small rails. More recently, Wolters (1975-82: 14) listed *Corethrura* G. R. Gray, 1846 as a genus containing *C. paykulli* (Ljungh, 1813) Band-bellied Crake; *C. fusca* (Linnaeus, 1766) Ruddy-breasted Crake; and the extinct *C. sandwichensis* (J. F. Gmelin, 1789) Hawaiian Crake, all usually assigned to *Porzana* Vieillot, 1816. To judge from the standard references, its origins are obscure. It is curious that R. B. Sharpe (1894: 115), who used *Corethrura* as a genus, cited only:

> Corethrura *Reichenb, Syst. Av.*[= Reichenbach, 1849, *Avium systema naturale*, date for pl. 21 from Zimmer (1926, p. 510)], tab. xxi, figs. 1-4 (1845? descr. nullâ).

Reichenbach figured *Corethrura jardinei* = *Gallinula jardinei* A. Smith, 1839 [=Crex affinis A.Smith, 1828] as the type. There is, as Sharpe's citation indicates, no description, but under ICZN 12. 2. 5 the reference to Smith's name is sufficient to serve as an "indication" for a name published before 1931.

However, *Corethrura* Reichenbach, 1849 is preoccupied by *Corethrura* G. R. Gray, 1846, *The genera of birds*, 3, p. 595, as noted by Ripley (1977: 167). Gray gave a full description and listed 31 species; he also figured the head of *Corethrura rubiginosa* = *Rallus rubiginosus* Temminck, 1825 = *Rallus fuscus* Linnaeus, 1766 as the typical species. Interestingly, Gray follows the name *Corethrura* with "Reich.*" and the footnote "*" stated "Established by M. Reichenbach in 184-? Rallina of the same author is synonymous." However, as far as I can discover, this must refer to an unpublished name of Reichenbach's. This makes *Corethrura* G. R. Gray, 1846 a junior synonym of *Porzana* Vieillot, 1816, which has "Marouette" of Buffon = *Rallus porzana* Linnaeus, 1766, Spotted Crake as its type.

But both Gray's and Reichenbach's names appear to be preoccupied by:

> *Corethrura* Hope, 1843, *Transactions of the Linnean Society of London*, 19 (3), p. 135. (*Hemiptera*)

In other words, the name *Corethrura* appears to be unavailable as a generic or subgeneric name for birds. The next available name to replace *Corethrura* G. R. Gray, 1846, as a subgeneric name including *P. paykulli*, *P. fusca* and *P. sandwichensis* appears to be *Limnobaenus* Sundevall, 1872, *Methodi naturalis avium disponendarum tentamen*, p.130, with type, by subsequent designation (R. B. Sharpe, 1894, *Catalogue of the birds in the British Museum*, 23, *Fulicariae and Alectorides*, p. 145) *Rallus fuscus* Linnaeus, 1766. Sharpe (1894: 145 -150) listed *Limnobaenus* as a genus including *L. fusca*; *L. phaeopygus* [= *P. fusca phaeopyga* Stejneger, 1887]; *L. paykulli* and *L. suahelensis* (Tristram, 1882) [=*Porzana marginalis* Hartlaub,1857].

After the citation for *Corethrura* Reichenbach, [1845? = 1849] discussed above, Sharpe (1894: 115) also listed:

> Sarothrura *Heine & Reichen.*, *Nomencl. Mus. Hein.*[= Heine, 1890, in Heine & Reichenow, *Nomenclator Musei Heineani Ornithologici*] p. 319. (1890; nom. emend.)

with the type listed as *C. rufa* i.e. *Rallus rufus* Vieillot, 1819. Peters (1934: 194), on the other hand, stated "New name for *Corethrura* Reichenbach, 1853 (not *Corethrura* Gray, 1846). Type, by original designation, *Gallinula jardinei* A. Smith, [1839] = *Alecthelia lineata* Swainson [1838] [=Crex affinis A.Smith, 1828]", a typification which is reproduced by Ripley (1977: 167). It appears that Peters derived this typification from W. L. Sclater (1924: 104), who stated after *Sarothrura* Heine, 1888 [sic!] "nom.nov. pro *Corethrura* Reichb.1853, *nec* Gray,1846. Type by original designation, *Gallinula jardinei* = *Alecthelia lineata* Swainson. W. L. Sclater placed *ayresi* in *Coturnicops*, following the original describer, Gurney, 1877, but retained all the other Flufftails in *Sarothrura*. (1924: 104 - 107)

In fact, Heine (1890: 319) listed only "1. dimidiata (Temm.)." and did not mention either *Corethrura* Reichenbach, 1849 or *Corethrura* G. R. Gray, 1846. In Sharpe (1894: 121), we find in the synonymy of *Corethrura rufa*: "Porzana dimidiata, *Temm.*[inck] (ubi?), *Less.[on] Traité d'Orn.[ithologie*] p. 537 (1831)." This is a junior synonym of *Rallus rufus* Vieillot, 1819. As in the case of *Corethrura* Reichenbach, 1849, there is no description, but under ICZN 12. 2. 5, the reference to "dimidiata (Temm.)" is sufficient to serve as an "indication" for a name published before 1931.

Michael Walters has kindly pointed out to me (pers. comm., 8 March 2002) that further light is cast by a footnote in Sharpe's *Handlist* (1899: Vol. 1, p.103):

> Dr. Reichenow (*Orn[ithologische] M.[itteilungen] B.[erlin*] iv, p. 4, 1896) suggests the restitution of *Sarothrura* of Heine (*Nomencl. Mus. Heine.*, p. 319) in place of *Corethrura* Reichenbach, as the first mention of the latter genus occurs in Gray's *Genera of Birds*, in 1846. In 1852 Reichenbach figured, as the type of his genus *Corethrura*, *C. jardinei* (= *C. lineata*); but as Gray in 1846 had previously given a full description of "Corethrura, Reichenbach"

> and figured the head of *C. rubiginosa* [pl.161. fig 7 = *Limnobaenus fuscus* (Linn.)] as the typical species, Dr. Reichenow's suggestion will have to be adopted.

It appears that W. L. Sclater (1924), and following him Peters (1934), have misinterpreted this footnote as indicating that *Sarothrura* Heine, 1890 is a nomen novum for *Corethrura* Reichenbach, 1849. However, such a treatment is unjustified, as Heine (1890) made no such indication, and further the type of Heine's name was not included among the species listed under *Corethrura* Reichenbach, 1849. Thus the correct citation for *Sarothrura* is:

> *Sarothrura* Heine 1890, in Heine & Reichenow, *Nomenclator Musei Heineani Ornithologici*, p. 319. Type, by monotypy, "*dimidiata* (Temm.)" = *Porzana dimidiata* Lesson, 1831 = *Rallus rufus* Vieillot, 1819.

Neave (1940: Vol. 4, p. 114) indicated that *Sarothrura* Heine, 1890, is also itself preoccupied by

> *Sarothrura* Hasselt, 1823, *Algemeene Konst- en Letterbode*, (20), p. 317. (Pisces).

I am aware of only one other available name relating to birds hitherto placed in the genus *Sarothrura*:

> *Lemurolimnas* Salomonsen, 1934, *Ibis*, p. 338. Type, by original designation, *Zapornia watersi* Bartlett, 1879 [= 1880].

It happens that this name applies to what is apparently the most deviant member of the group, *S. watersi*, Slender-billed Flufftail. Salomonsen characterised the proposed genus as follows:

> Description. - Nearest to *Sarothrura* Heine, but differing in the following points:-
>
> 1. Bill much finer and thinner (height at base less than third of length of bill; in all *Sarothrura* between half and third of length of bill).
> 2. Nostrils longer and quite horizontal; in *Sarothrura* somewhat oblique.
> 3. Wing more pointed (distance between longest primary and first (shortest) secondary much greater than in any species of *Sarothrura*; first primary of the same length as first secondary being much - as a rule about 10 mm. - shorter).
> 4. Tarsus much shorter than middle toe (minus claw); in *Sarothrura* tarsus is longer than middle toe, or of equal size, or a trifle shorter.
> 5. Tail-feathers not so fluffy, of a more solid construction.
> 6. The characteristic white or yellow dots which are found in all *Sarothrura* are absent, both male and female being plain-coloured on the upperparts, the male resembling *Porzana fusca*. (1934: 388-89)

It should be said immediately that a major problem with *S. watersi* is the extreme rarity of the species; and presumably, the lack of material has inhibited adequate study of this taxon. The sixth character may not be wholly accurate, as Taylor (1996: 146) said of the **immature** female *watersi*: "...duller than adult, with small white spots scattered over upperparts, wings and sides of breast." But according to the same account, the adult male and female lack the prominent spotting or streaking characteristic of all other Flufftails, including *S. ayresi* (Gurney, 1877) White-winged Flufftail, which, according to Taylor (1996: 145), forms a species pair with *S. watersi*. The figure of the female *watersi* in plate 9 opposite p. 143 does show white spots and appears to represent not the female, as indicated, but the immature female.

Ripley (1977: 167-185), who lumped all of the Flufftails in *Coturnicops* G. R. Gray, 1855, together with *Mycropygia schomburgkii* (Schomburgk, 1848) Ocellated Crake, merely listed *Lemurolimnas* in the synonymy of *Coturnicops* without any comment on the possible distinctness of *watersi*. Also, Salomonsen (1934) is not listed in the "Literature cited". Taylor (1996: 109), who generally followed the taxonomic treatment of Olson (1973), did not mention any possible distinctions among the Flufftails in his discussion of systematics, and assigned all of the Flufftails to *Sarothrura*. As noted above, he treated *S. ayresi* as a species pair with *S. watersi*. Taylor (1998) followed the (1996) analysis and, like the earlier account, did not mention Salomonsen (1934) in the general references or bibliography.

It is likely that the reason why Taylor (1996 & 1198) did not refer to Salomonsen's *Lemurolimnas* is the same as his reason for linking *S. ayresi* with *S. watersi*: namely that he relied on the review of the genus *Sarothrura* by Keith *et al.* (1970). Those authors stated:

> Salomonsen (1934, p.388) has proposed a separate genus, *Lemurolimnas*, for *S. watersi*, on the basis of certain structural peculiarities, although we agree with Rand (1936, p. 361) that this does not seem necessary. Such peculiarities as there are *may be the result of long isolation of watersi in Malagasy* [sic!, emphasis added] although it may be relatively close to *ayresi*, as discussed in the section on phylogeny. See pp. 71 - 73. The summary of measurements for the individual species in Sarothrura (table 2) does not suggest any unduly striking peculiarity. Nor do Salomonsen's own figures, apart from the increase in distance in *watersi* between the longest primary and shortest secondary, and the length of the first primary in relation to the secondaries. It is also true that the nostrils are much longer than in *ayresi*, for example, and that the tail is of relatively solid construction. But as regards the latter character, it would appear that in pulchra, affinis, and insularis the tail is little less solid. According to the findings in the section on phylogeny, this character thus appears in three out of our four groups and therefore may not be significant. As to the plain color of the upper side, it would seem that markings *have been lost in the course of isolation* [sic! Emphasis added] Some females do show traces of spotting. Thus we feel that the systematics situation is best reflected by retaining *watersi* in *Sarothrura*. (1970: 69)

This passage has been quoted at some length because it represents the supposedly definitive statement on the relationship between *watersi* and other members of the genus. Attention needs to be drawn, first, to the appeal to the " *long isolation of* *watersi*" as a catch-all dismissal of differences between that species and other members of *Sarothrura*. "Long isolations" lead to genetic divergence, which is the basis of separation into distinct species and genera, which is supposedly the issue here. As for the statement that "The summary of measurements for the individual species in *Sarothrura* (table 2) does not suggest any unduly striking peculiarity": the only measurement which appears relevant to Salomonsen's criteria is the ratio of tarsus to middle toe. Using the figures of Keith *et al.* (1970: 9), the middle toe measurement of *watersi* (32 mm) is the only species with a measurement over 30 mm, except for *S. p. pulchra* and *centralis*, also 32 mm. But the tarsus measurement of the latter species is 29 mm, while that of *watersi* is 22 mm. Surely these measurements support Salomonsen's claim.

Keith *et al.* (1970) conceded point 3 of Salomonsen's criteria. They also conceded the difference in nostrils (point 2), at least in relation to *S. ayresi*. They did not address Salomonsen's first point, which related to the ratio between height and length of the bill at all, although they stated, in the section on "Possible phylogeny": "*Sarothrura watersi* has an unusually long fine bill; measurements show it to be much longer than in *ayresi*, or in the sympatric *insularis*" (1970: 71). They disputed point 5 about tail structure. In relation to point 6, the lack of white or yellow dots or streaks found in all other members of *Sarothrura*, they stated (1970: 69) "Some females do show traces of spotting." More recent descriptions (see above) indicate that it is only immature females that show such spots. Adult *watersi* do not show any of the white or yellow spots and streaking so prominent in all other members of the genus.

In short, we do not feel that Keith *et al.* (1970) have, in fact, refuted Salomonsen's proposed criteria. A further issue that has emerged since Keith *et al.* (1970) is the calls of *S. watersi*, first described in Wilmé & Langrand (1989): "The vocalizations of *S. watersi* differ considerably from those of all other *Sarothrura*. *S. watersi* is the only member of the genus known to utilise only non-resonant (rapidly muted) components. The call covers a wide range of frequencies and is relatively brief. Nevertheless, the longest notes and those with the highest energy in *S. watersi* are at low frequencies." (1989: 219) Taylor (1998: 176) cited evidence from A. Riley (in litt. to Taylor) who "describes the three-note call as a loud *chang chang chang*. A 2-note version sometimes precedes the 3-note calls and has the first syllable accentuated *GOO goo*, and longer series of 4-7 note are occasionally heard; notes vary in pitch. The alarm call is a characteristic *tiec*." Wilmé & Langrand stated that playback of their call attracted an individual to within 1 m of the speaker, while emitting its own calling response (1989: 218) With either description, the call of *watersi* appears to separate it from all other flufftails. König *et. al.* (1999: 33 - 35) argued the importance of calls as a fundamental mechanism of genetic isolation in relation to owls, as primarily nocturnal birds. A similar argument can be made for voice as an isolating mechanism in rails, which generally operate in conditions of poor visibility.

It is also worth discussing the linkage of *watersi* and *ayresi* in a superspecies, which stems from Keith *et al.* (1970) and is followed by Taylor (1996 and 1998), which would contradict our endorsement of Salomonsen's (1934) separation of *watersi* under *Lemurolimnas*. Keith *et al.* (1970: 71) began by stating: "...*ayresi* and *watersi* seem fairly closely related, *despite the absence in the latter of white on the secondaries and almost so of any pattern on the mantle and wing coverts* [sic! Emphasis added], although some females do show a little vestigial spotting." It was pointed out above that this appears to be a feature of only immature females. They continued: "The affinity between the two is perhaps best shown on the tail. In males, *ayresi* is barred with black, in *watersi*, there are black tips." But barring similar to that in male *ayresi* occurs in the tail of male *S. elegans*, Buff-spotted Flufftail, and in the tail of female *S. affinis*, Striped Flufftail; and *watersi* displays black tips, not black barring. The loss of spotting in *watersi* is said to be "probably the result of prolonged isolation". I have already emphasised the flaws in appealing to "prolonged isolation" as a reason why one should ignore differences between taxa. The data in Keith *et al.*'s Table 2 (1970: 9):

	Wing	Culmen	Tarsus	Middle Toe
S. ayresi	76	13	18	26
S. watersi	72	16	22	32

certainly do not suggest any close relationship between the two taxa. Overall, I am puzzled as to why Keith *et al.* (1970) claimed that these two taxa should be treated as "sister species". Only one piece of evidence is offered in favour, although on closer examination, the black barring on the tail does not uniquely unite *ayresi* and *watersi*; and in fact, *watersi* has black tips, not black barring. In conclusion, nothing in the review of *Sarothrura* by Keith *et al.* (1970) is convincing in arguing either for the treatment of *ayresi* and *watersi* as a species pair, or against the separation of *watersi* from other flufftails.

Wolters, who treated *Lemurolimnas* as a monotypic subgenus, commented: "*Lemurolimnas* ist vielleicht als eigenes Genus zu führen." [i. e. "*Lemurolimnas* should possibly be treated as a monotypic genus."] (1975-82: 11). I believe that Salomonsen's assignation of *watersi* to its own genus *Lemurolimnas* is correct, in that of the characteristics he describes, characters 1, 2, 3, 4 and 6, plus voice, do appear to distinguish *watersi* sufficiently from all other Flufftails to justify its assignment to a distinct genus. (One would like to have DNA sequences to confirm this proposal, but the chances of obtaining material from the Slender-billed Flufftail must be vanishingly small.) Accordingly, a new generic name is needed for the remainder of the species formerly assigned to *Sarothrura*. (In any case, a new subgeneric name is needed if *Lemurolinas* represents a monotypic nominal subgenus.) I propose

***Daseioura* nom. nov.** for *Sarothrura* Heine & Reichenow, 1890, not

Sarothrura Hasselt, 1823 (Pisces). Type species: *Rallus rufus* Vieillot, 1819, of which "dimidiata Temm." of Heine, 1890 = *Porzana dimidiata* Lesson, 1831 is a junior synonym.

Etymology: based on Greek δασύς "hairy, shaggy", fem. δασεϊσ, an adjective used of birds in Theophrastus, *Fragmenta*, 180; and ουρα "tail", and represents a rough translation of the English name "Flufftail". Gender: Feminine. I am aware of the existence of *Dasyurus* Geoffroy, 1796, and *Dasyuris* Guenée, 1868 but under ICZN 56.2 "One-letter difference", these do not appear to pre-occupy the proposed name *Daseioura*.

We thus have:

Daseioura pulchra (J. E. Gray, 1829) White-spotted Flufftail with subspecies *D. p. pulchra*; *D. p. zenkeri* (Neumann, 1908); *D. p. batesi* (Bannerman, 1922); and *D. p. centralis* (Neumann, 1908)

Daseioura elegans (A. Smith, 1839) Buff-spotted Flufftail with subspecies *D. e. reichenovi* (Sharpe, 1894); and *D. e.elegans*.

Daseioura rufa (Vieillot, 1819) Red-chested Flufftail with subspecies *D. r. bonapartii* (Bonaparte,1856); *D. r. elizabethae* (van Sommeren, 1919); and *D. r. rufa*.

Daseioura lugens Böhm, 1884 Long-toed Flufftail with subspecies *D. l. lugens;* and *D. l. lynesi* (Grant & Mackworth-Praed, 1934).

Daseioura boehmi (Reichenow, 1900) Streaky-breasted Flufftail.

Daseioura affinis (A. Smith, 1828) Striped Flufftail with subspecies *D. a. antonii* (Madaráz & Neumann, 1911); and *D. a. affinis*.

Daseioura insularis (Sharpe, 1870) Madagascar Flufftail.

Daseioura ayresi White-winged Flufftail.

Lemurolimnas watersi (Bartlett,1890). Slender-billed Flufftail.

Ortygonax Heine, 1890

Wolters (1975-82: 13) treated *Ortygonax* Heine, 1890, as a subgenus of *Pardirallus* Bonaparte, 1856, containing the species *P. nigricans* (Vieillot, 1819) Blackish Rail, and *P. sanguinolentus* (Swainson, 1837) Plumbeous Rail. The citation for *Ortygonax* given by Peters (1934: 168-169), who also treated it as a valid genus containing the two species just mentioned, is:

> *Ortygonax* Heine, in Heine and Reichenow, [*Nomenclator Musei Heineani Ornithologici*], 1890, p. 321. Type, by subsequent designation *Rallus rytirhynchos* Vieillot (Sharpe, Cat. Bds. Brit. Mus., 23, 1894, p.27.)

Rallus rytirhynchos Vieillot 1819 was based on "Ypacahá pardo" of Azara (1805: 220) of Paraguay. Zimmer (1930: 251) listed *Rallus rytirhynchos* Vieillot as indeterminable. Peters (1934: 168, footnote 1) stated "*Rallus rytirhynchos* Viellot seems to me to be identifiable as this species, and not unidentifiable as claimed by Zimmer...". However, Hellmayr & Conover (1942: 319, footnote 1) put the matter beyond doubt: "...Azara's description refers to three immature birds and is of very doubtful applicability...In view of the uncertainty surrounding Vieillot's name, which might just as well have been based on immature individuals of *R. nigricans* likewise found in Paraguay, it is preferable to use Swainson's term, whose type still exists and leaves no possible doubt as to its pertinence." Taylor (1996: 193) concurred in treating Vieillot's name as "unidentifiable". This leaves Sharpe's (1894) designation of a type of *Rallus rytirhynchos* Vieillot 1819 for *Ortygonax* Heine 1890 as invalid. Accordingly, I hereby designate *Rallus sanguinolentus* Swainson, 1838 as the type species of *Ortygonax* Heine 1890.

Anurolimnas Sharpe 1893 and *Rufirallus* Bonaparte 1856

Taylor (1996: 109) stated: "This work follows the taxonomic treatment of Olson [1973], modified in some cases by more recent morphological studies." Accordingly, he assigned *Porzana castaneiceps* P. L. Sclater & Salvin, 1868 [= *Anurolimnas castaneiceps*] Chestnut-headed Crake; *Rallus viridis* P. L. S. Müller, 1776 [= *A. viridis*] Russet-crowned Crake; and *Porzana fasciata* P. L. Sclater & Salvin, 1867 [= *A. fasciatus*] Black-banded Crake to the genus *Anurolimnas* Sharpe, 1893, the type of which is *Porzana castaneiceps* P. L. Sclater & Salvin, 1868 (1996: 56). Peters had previously assigned *castaneiceps* to *Anurolimnas* (1934: 181), but placed *viridis* and *hauxwelli* P. L. Sclater & Salvin, 1868 [= *Porzana fasciata* P. L. Sclater & Salvin, 1867] in *Laterallus* G. R. Gray, 1855 (1934: 191-92).

If all three species are judged to be congeneric, then the name *Rufirallus* Bonaparte, 1856 appears to have priority over *Anurolimnas* Sharpe, 1893. Wolters (1975-82: 10) did assign *viridis* to this genus, together with *Corethrura rubra* P. L. Sclater & Salvin 1860 [= *Laterallus ruber*], Ruddy Crake; and *Porzana levraudi* P. L. Sclater & Salvin,1868 [= *L. levraudi*], Rusty-flanked Crake, the latter two normally being placed in *Laterallus*. However, Wolters placed *fasciatus* and *casteneiceps* in *Anurolimnas*. Bonaparte did not designate a type under *Rufirallus*, but listed three species, together with synonyms:

> 339. *cayanensisis*, L.[inneus]. (Rallus)
> (G. ruficollis, Sw.[ainson] [= *Gallinula ruficollis* Swainson, 1838 = *Laterallus exilis* (Temminck, 1831)] plicatus Wied. [18_?] kiolo Vieill. [= *Rallus kiolo* Vieillot, 1819]
>
> 340. *boecki*, Bo. Mus. Berol. [= *Rufirallus boecki* Bonaparte,1856 = *Rallus concolor* Gosse, 1847, now placed in *Amaurolimnas* Sharpe, 1893]
>
> 341 *castaneus*, Cuv.[ier] = [*Rallus castaneus* Lesson (ex Cuvier MS), 1831 no description and hence nomen nudum = *Rallus concolor* Gosse, 1847]
> concolor? Gosse
> rufipennis? Gr. [= *Rallus rufopennis* G. R. Gray 1844 no description hence nomen nudum = *Rallus antarcticus* King, 1828.]

A type for *Rufirallus* Bonaparte, 1856 was subsequently designated by P. L. Sclater & Salvin (1868: 450) as *Rallus cayennensis* J. F. Gmelin 1789 = *Rallus* *cayanensis* Boddaert, 1783 = *Rallus viridis* P. L. S. Müller 1776. P. L. Sclater & Salvin included in *Rufirallus*: *Porzana cayanensis* (Gm.), *Porzana levraudi* sp. nov., *Porzana rubra* P. L. Sclater & Salvin, 1860, *Porzana concolor* (Gosse, 1847) and *Porzana castaneiceps* sp. nov.

More recently, Ridgely & Greenfield (2001), contra Olson (1973), have returned *fasciatus* and *viridis* to *Laterallus* on the grounds that, "Information obtained subsequently concerning their vocalizations appears clearly to place both in the genus *Laterallus*, where they traditionally have been classified (e.g. Meyer de Schauensee 1966, 1970)." (2001: 200). However, under *Laterallus viridis*, Ridgely & Greenfield stated further: "Sick (1993) suggested that this species may merit generic separation in the monotypic genus *Rufirallus*, and indeed it does seem distinct from other *Laterallus* species." (2001: 200). What Sick actually said is:

> Unusual among rallids in its adaptation to dry environments...In completely dry fields of thatching grass or brush, frequently far from water (e.g., on hills below Sugar Loaf in Rio de Janeiro)...It has been proposed to place it in a separate genus, *Rufirallus*, in consideration of its special form of molt and color of its eggs. Together with *L. fasciatus* it could be included in genus *Amaurolimnas*. See *Micropygia schomburgkii*, which also lives far from water. (1993: 213)

In the section on "Breeding" of the chapter on *Rallidae*, Sick stated that "...unlike other rail species, both *L. viridis* and *L. leucopyrrhus* have pure white eggs..." (1993: 210). If Sick's suggestion is accepted, we would end up with *Laterallus fasciatus* (P. L. Sclater & Salvin, 1867); *Rufirallus viridis* (P. L. S. Müller, 1776); and *Anurolimnas castaneiceps* (P. L. Sclater & Salvin, 1868).

More recently still, Storrs Olson (pers. comm., 2001) has informed me that "A preliminary molecular phylogeny developed by Beth Slikas has *castaneiceps* as a sister group of what is usually included in *Laterallus* plus *Coturnicops* and *P. flaviventer* [Yellow-breasted Crake]. A group consisting of *fasciatus*, *viridis*, and *leucopyrrhus* [Vieillot, 1819] [Red-and-white Crake, currently assigned to *Laterallus*] is sister to the preceding group, and if this stands, *Rufirallus* could be used for these three species." If this analysis is substantiated, it would lead to a necessity to choose between *Coturnicops* G. R. Gray, 1855 and *Laterallus* G. R. Gray, 1855 for the first group. These names occur on the same page. As both names occur on the same page, I choose *Laterallus* G. R. Gray, 1855. Thus we would have, in addition to the 10 species currently in *Laterallus*:

Laterallus exquisitus (Swinhoe, 1873) Swinhoe's Rail.

Laterallus noveboracensis (J. F. Gmelin, 1789) Yellow Rail

Laterallus notatus (Gould, 1841) Speckled Rail

Laterallus flaviventer (Boddaert, 1783) Yellow-breasted Rail

Anurolimnas castaneiceps (P. L. Sclater & Salvin, 1868) Chestnut-headed Crake

Rufirallus viridis (P. L. S. Müller, 1776) Russet-crowned Crake

Rufirallus fasciatus (P. L. Sclater & Salvin, 1867) Black-banded Crake

Rufirallus leucopyrrhus (Vieillot, 1819) Red-and-white Crake

Whichever of these scenarios develops, it is clear that *Rufirallus* Bonaparte, 1856, will have to be resurrected, either in place of *Anurolimnas* Sharpe 1893, or in addition to that name.

Ortygometra auct.

Anyone who looks at the synonymy of smaller rail species will inevitably come across the generic name *Ortygometra* in nineteenth-century citations. When I looked for the origin of this name, I found that it was not mentioned in any of the standard ornithological reference works (e g. Sharpe, 1894; Hartert, 1921; Peters, 1934; Ridgway, 1941, Hellmayr & Conover, 1942). The earliest citation I could find (through its mention in the sources of Linnaeus (1758)) was:

> *Ortygometra* Aldrovandus, 1603-81, *Ornithologiae, hoc est de Avibus Historiae*, libri XII, bk. 13, p. 23. referring to *Crex crex*.

Neave (1940: Vol. 3, p. 477), cited two sources. The first is "Moehring, 1752, 6, 63 (Nozem. & Vosm., 1758)". This is:

> *Ortygometra* Nozeman & Vosmaer, 1758, *Geslachten der Vogelen...*, (Dutch Translation of Moehring, 1752, *Avium Genera*), 6, 63.

On page 6, we find we find the name in a mere listing of "Rank V", as γ *Ortygometra*. On page 63, as species number 85, we find "Kwartelkoning" (Dutch for "Corncrake") with references to Willughby's *Ornithology* (1678, page 122 and table 29) where Aldrovandus is cited. However, Nozeman & Vosmaer, 1758, *Geslachten der Vogelen*, was rejected by ICZN Opinion 241 for nomenclatural purposes because the names therein were not reinforced by adoption or acceptance. So clearly the name is not available from this source.

The second citation was Leach, 1816. That is:

> *Ortygometra* Leach, 1816, *A Systematic Catalogue of the Specimens of the Indigenous Mammals and Birds in the British Museum*, p. 34.

Leach listed three items under *Ortygometra*:

> Ortygometra Crex female. Corncrake female. Camarthenshire. G. Montague, Esq. Ortygometra Maruetta, male. Spotted Crake, male. Devonshire, G. Montagu, Esq. Ortygometra Maruetta, female. Spotted Crake female.

Although Leach, 1816, is not listed among the list of rejected works by the ICZN, Michael Walters (pers. comm.) states:

> " Leach's Catalogue of 1816 was not really a publication in the strict sense. It was most likely intended to be cut up as a series of labels for specimens in the collection."

Later sources include:

> *Octogometra* [*sic!*] E. Forster, 1817, *Catalogue Avium in Insulis Britannicis habitantium*, p. 27. Type, by monotypy, *Rallus crex* Linnaeus, 1758. Corrected to *Ortygometra*, p. 59.

I was alerted to this citation by Mathews (1927, p. 89). It is also included in Neave (1940). I also note as variant spellings *Ortygonometra* Griffith, 1829, *The animal kingdom...by the Baron Cuvier*, 8, p. 406; and *Ortygiometra* Streubel, 1842, in Ersch & Gruber, *Allgemeine Encyklopedie der Wissenschaft und Künste...*, (3), 16, p. 291. Not included in Neave (1940) is:

> *Ortygometra* G. R. Gray, 1871, *Hand-list of the genera and species of birds ...in the British Museum*, 3, p.62, no. 2679

who credited the generic name to Linnaeus, 1744 and Leach, 1816. The genus as construed by him consists of several subgenera, including a. *Ortygometra*; b. *Porzana*; c. *Limnocorax*, d. *Zapornia*, e. *Thryorhina* and f.———?, the last including *Alecthelia* Sw.[ainson] 1837, *nec* Less.[on] 1826; *Corethrura* Reich.[enbach] 1853?; Reich.[enbach] S.[ystema] A.[vium] [=*Avium systema naturale*] t. 21 f. [unspecified]. The only species listed under subgenus *Ortygometra* is 10450 *crex* L. In conclusion, it appears that the correct citation for *Ortygometra* is:

> *Ortygometra* E. Forster, 1817, *Catalogue Avium in Insulis Britannicis habitantium*, p. 59, corrected from *Octogometra*, p. 27. Type, by monotypy, *Rallus crex* Linnaeus, 1758.

which makes it a synonym of *Crex* Bechstein,1803.

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Confirmed breeding record of the Crab Plover *Dromas ardeola* in Eritrea

by G. Chiozzi & G. De Marchi

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The Crab Plover *Dromas ardeola* breeds from April to August on islands in the northwestern Indian Ocean, where twelve known colonies are confirmed to have survived since 1970: three in Iran, two in the United Arab Emirates, one in Oman, two in Saudi Arabia along the Red Sea coast, two in Somalia (Rands 1996) and two in Sudan (Nikolaus 1989). The species is also suspected to breed in Yemen (Rands 1996), Kuwait (Cowan 1990, Wright 1995), Sri Lanka (Palmes & Briggs 1986) and Eritrea (Smith 1957, Clapham 1964, Urban & Boswall 1969). This paper confirms that Crab Plovers breed in Eritrea, at Dahret, a small island of the Dahlak Archipelago.

Dahret (15° 53' N; 39° 34' E), 34 km north of Massawa, is a 25 ha flat (*c.* 2 m a.s.l.) sandy coral island. Rocky outcrops emerge along the shore a few cm above the ground and the vegetation is entirely composed of grasses and herbs <50 cm tall.

The Crab Plover colony was discovered on 2 June 2001, on the southeastern coast, close to the sea. A broken fresh egg, on the soil surface amid the burrows, testified that egg laying had recently started. We visited the island four times between 2 June and 26 August 2001. On 17 July we censused the occupied nests by placing a stick at the entrance of each of 149 burrows evident in the colony. After 24 h, the birds had removed 83 sticks, 60 were left in place and 6 were dubious, leading to an estimate of 83-89 pairs. The previous evening 150 adults were seen at the colony, supporting the estimate.

On Dahret, we saw only a few Crab Plovers foraging and we saw none on the neighbouring islands of Dohul and Dohul Bahut during a boat survey on 18 July. We suspect that Crab Plovers might hunt mainly on Harat Island (*c.* 20 km north of Dahret) where mudflats and mangroves create a suitable habitat for crabs and mudskippers and where Clapham (1964) observed young soliticiting food from adults between 21-24 August 1962. By 26 August 2001 all Crab Plovers, apart from two adults, had left Dahret.

In addition to the occupied colony, we discovered nine still discernible old colony sites around the island perimeter, <100 m inland. Dahret therefore appears to be an important traditional breeding ground for the species.

At present, this nesting site seems to be under no direct threat. In fact, no mammals or reptiles, which could prey on eggs or chicks, occur on the island. Man used to exploit Crab Plover eggs and chicks for food in the Persian Gulf (Brown *et al.* 1991, Rands 1996) but we have no evidence that this happens in the Dahlaks. Local and Yemeni fishermen sometimes collect tern eggs (Meleca 2001) and this still occurs on Dahret (pers. obs.). An indirect threat may indeed be represented by tourism, but this is limited, especially during the hottest months of the year, when Crab Plovers nest.

The world population of Crab Plovers, estimated at *c.* 43,000 individuals (Rose & Scott 1994), is not considered at immediate risk of global extinction (Rands 1996) and the species was not included in the Red List by Collar *et al.* (1994).

In the last century, however, colonies such as those in northern Kenya (Archer 1937), Kuwait (Cowan 1990) and Saudi Arabia (Newton & al Suhaibani 1996), have disappeared and the few known nesting sites of this bird should be secured against any direct or indirect human interference. The Dahlak Archipelago has been recommended as a national park (IUCN/UNEP 1987, 1988) but this has not yet been established. We recommend that Dahret Island is conferred appropriate protection on account of its ornithological importance.

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Gambaga Flycatcher *Muscicapa gambagae*: evidence for migration in West Africa?

by Volker Salewski, Karl H. Falk, Franz Bairlein & Bernd Leisler

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Despite reviews by Elgood *et al.* (1973) for Nigeria and Curry-Lindahl (1981) for Africa, knowledge of intra-African migration systems remains poor. The Gambaga Flycatcher *Muscicapa gambagae* is thought to be migratory (Urban *et al.* 1997). It has a disjunct distribution from Mali and Ivory Coast in the west to Somalia and south-west Arabia in the east, and Zaire and Kenya in the south (Urban *et al.* 1997). In West Africa it is claimed to be resident in Liberia, Ivory Coast, Ghana, Togo and Nigeria (Dowsett & Forbes-Watson 1993), a non-breeding migrant in Mali from August to December, presumably breeding further south in March and April (Urban *et al.* 1997) and moving northwards with the rains (Lamarche 1981). It has been recorded as a vagrant in Burkina Faso (Holyoak & Seddon 1989) and was recently recorded from Guinea (Nikolaus 2000). Borrow & Demey (2001) described its status as a rare to scarce resident and partial migrant in the above-mentioned countries. In East Africa it is also thought to be a partial migrant based on the mist-netting of 3 juveniles at night at Ngulia, Kenya, presumably on migration, and on the fact that all East African records south of 7°N are from November to April (Urban *et al.* 1997). Breeding has been recorded in Kenya in March (Richards 1992) and in south-west Arabia in June (Castell *et al.* 2001). Here we present data which indicate that, in contrast to Dowsett & Forbes-Watson (1993) and Salewski (2000), the Gambaga Flycatcher is a migrant to northern Ivory Coast and give information about its phenology there, together with the first breeding records for West Africa.

Our observations were made in Comoé National Park (11,491 km², altitude mainly 250-300 m, but with peaks to 600 m), north-east Ivory Coast (8°30'N-9°35'N, 3°00'W- 4°30'W), from mid-September to the end of April in the winters, 1994-1997 (in 1996/97 only from September to December and from the end of January to the end of April). The rainy season is from March/April to October and the dry season from November to February/March; average annual rainfall varies between 1,100 and 1,300 mm. The average annual temperature is 27°C. The north-east of the park is in the soudanian savanna zone, the south-west in the northern guinean savanna zone (Poilecot 1991). The habitats comprise mainly savanna (70%) with open woodland and riparian forest along the main rivers (Comoé, Iringou). There are scattered isolated forests of varying size without any connections to riparian forest mainly in the south of the park (Poilecot 1991).

Each day we spent eight to ten hours observing or mist-netting birds in different habitats within a radius of *c.* 5 km from of our base camp (8°45'N, 3°49'W) and listed all species encountered. From these lists we calculated encounter rates for Gambaga Flycatchers by expressing the number of days with observations as a percentage of the total number of days in the month when observations were made. Due to the low number of observations in some months we calculated the mean of each month in the three seasons. Some additional observations were made in the same area in February-April 1998, in September-October 2000, and in the north of the park (9°16') in early 1999.

The occurrence of Gambaga Flycatchers in the area was distinctly seasonal (Fig 1), rising from a low observation rate in October, peaking in February and falling again to April. The only September record was in 2000 when one bird was mist-netted late in the month. From October to November we encountered mostly single birds in an isolated forest, whereas after the savanna fires in late December we regularly saw many birds in the savanna, often in pairs.

Of 20 birds mist-netted between September and April in bush/tree savanna and an isolated forest, only one had a few body feathers (<20) in moult, in November. Primaries of two birds netted in September and December were new, those of twelve birds netted in November-March were old and much abraded by February and March. For four birds (in December, February, March and April respectively) we were unable

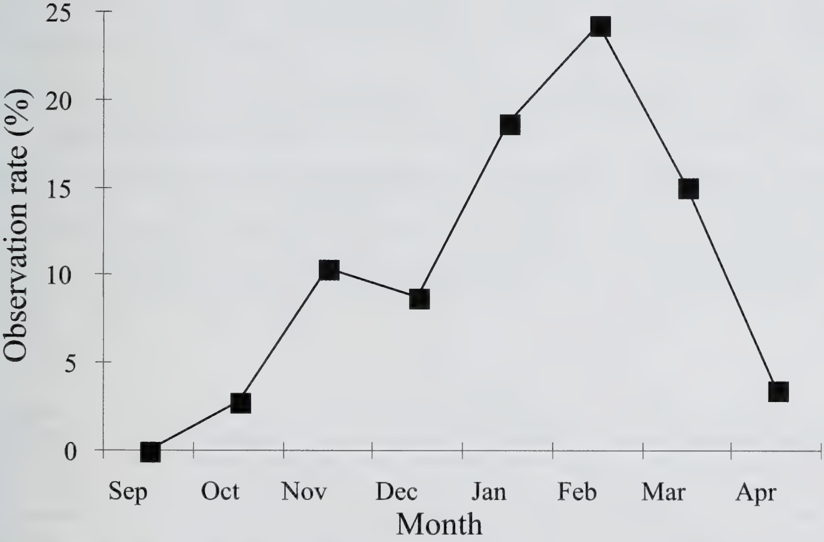

Fig. 1: Phenology of Gambaga Flycatcher in northern Ivory Coast. The observation rate is the percentage of days with observations of the species out of the total number of days when observations were made, in several habitats in all three years.

to determine whether the primaries were new or old. Two birds in November 1996 showed interrupted moult with new outermost 3-5 primaries and old innermost 5-7 primaries, suggesting ascendant moult as in the consuperspecific Spotted Flycatcher *M. striata* (Jenni & Winkler 1994). No birds examined had an incubation patch.

Two nests were found in February 1998, in bush/tree savanna. One was 4 m high in a fork of a branch in an 8 m tall *Lophira lanceolata* tree; the other, 80 m away, was 2 m high in a 5 m tall tree, in the first fork where the stem divided into three branches. It had an outer diameter of 6-7 cm and was 4-5 cm deep; there were two eggs, later abandoned. (This nest was photographed by KHF). A pair of birds was seen copulating in February.

Our observations seem to indicate that the Gambaga Flycatcher is an intra African migrant at least in some parts of West Africa and its status as being resident might have to be revised. In Ivory Coast this is corroborated by the fact that apart from our study, observations were only made between December and May (Balchin 1988, Demey & Fishpool 1991, E. Williams pers. comm., O. Lachenaud pers. comm.) to our knowledge. We suggest therefore that Gambaga Flycatchers are dry season breeding migrants to the study area and spend most of the rainy season further north, although there is a July record from Pewa (9°16'N), Togo, but this locality is north of our study site (Walsh *et al.* 1990). The two nests are apparently the first breeding records for Ivory Coast and West Africa (Grimes 1987) apart from a nest described by Bates (1927) from a locality somewhere "between Lake Chad and southern Cameroon" and the observation of one adult feeding a youngster in Cameroon (Schollaert 2001). Our record confirms the March-April breeding season given by Urban *et al.* (1997).

Apart from our observations hardly any data are available on moult in Gambaga Flycatchers. Bates (1927) described a bird shot in July as being in badly worn plumage. Pearson *et al.* (1980) observed birds with fresh plumage in March and one with worn flight feathers in November in Kenya. Our data suggest that the species does not moult in the area. In September birds have rather fresh feathers which are abraded by April; we suggest that moult takes place later further north, paralleling the migration pattern of Grey-headed Kingfisher *Halcyon leucocephala* (Skinner 1968).

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A new population of the Udzungwa Forest Partridge

by Jon Fjeldså & Jacob Kiure

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The discovery of the Udzungwa Forest Partridge *Xenoperdix udzungwensis* in 1991 in the Udzungwa highland in Tanzania (Dinesen *et al.* 1994) has been characterised as one of the major surprises for the ornithological world in recent years (McGowan 1994). The species was suggested to represent a relict population from the early Miocene, when the Tethys Sea was closed and primitive forest partridges had a brief opportunity to distribute themselves all the way from the Oriental Region to tropical Africa. The postulated relationship between *Xenoperdix* and Asiatic forest partridges (*Arborophila*, *Rollulus* and others) has now been confirmed using molecular data (T.M. Crowe *in litt.*).

Within the Udzungwa highland, the species is still known only from the Nyumbanitu and Ndundulu Mts. It was therefore a great surprise when JK saw the species (and collected one identifiable feather) in March 2000 in the Maf-wemiro forest, a north-western outlier of the Rubeho highland. This is 150 km north of the type locality in the Udzungwa highland and isolated from it by a large inter-montane basin of arid lowland along the Great Ruaha River.

In December 2000 and January 2001 JK succeeded in catching three adult birds in Maf-wemiro forests. After comparing these with three Udzungwa specimens, kept in Copen-hagen, and with data concerning the specimen that is kept in University of Dar es Salaam (Dinesen *et al.* 1994), we are able to state that morphological differences are sufficiently consistent that we will recognize the Mafwemiro population as a distinctive and probably isolated form, which we name

TABLE 1

Measurements (mm) of collected specimens of *Xenoperdix udzungwensis*. The wing-length was flattened on a ruler and stretched; the bill was measured to the skull.

	Wing	Tarsus	Tail	Bill
Mafwemiro ZMUC Cat.no. 93.215	130.8	35.2	57.5	—
Cat. 93.216	137.0	36.4	61.8	18.7
Cat. 93.217	132.0	35.6	57.7	19.1
Udzungwa Cat. 91.301	149.0	39.0	73.0	23.7
Cat. 91.302	148.5	38.0	73.0	23.7
Cat. (spirit; tail partly lost)	140.5	36.8	(52.2)	19.7
UDSM specimen	137.5	35.5	68.0	23.7

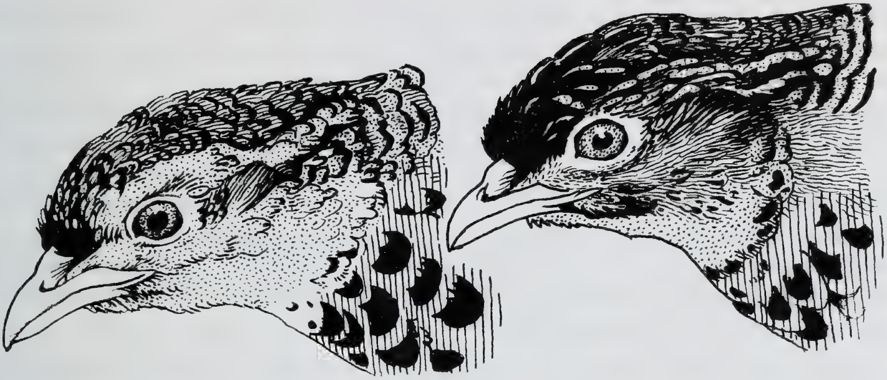

Figure 1. Portraits comparing *Xenoperdix* specimens from the Udzungwa Mts (based on ZMUC 91.302) and Mafwemiro Forest (ZMUC 93.215).

Xenoperdix udzungwensis obscurata, subsp. nov.

Holotype

The Zoological Museum University of Copenhagen (ZMUC) cat. no. 93.215. Sex not determined. Collected 29 December 2000 in Mafwemiro Forest (6°50'S 36°34' E), which covers the top plateau of an outlying ridge in the northern Rubeho Mountains, west of the main ridge. This forest is situated in the Mpwapwa District, Dodoma Region.

Diagnosis

All birds are distinctly smaller than those of the nominate subspecies (Table 1) with relatively shorter tails (0.44-0.45 of wing-length, against 0.49 in the nominate subspecies). None of the individuals have the "necklace" of mostly white feathers with variable black spots seen in the nominate subspecies (Fig. 1). Instead there is an arc of black spots placed along the olive-grey borderline between throat and breast. The face is more obscured with dusky than in the nominate subspecies, but this may be somewhat variable among individuals. Under tail-coverts have only faint traces of the ochraceous wash on the white distal parts seen in the nominate subspecies. Secondaries have, overall, less distinctive barring, and the wing-coverts have distinctive grey to whitish distal margins, giving a scaly effect quite unlike the black-and-ochraceous barring in the nominate form. Rectrices are less broad (11-14 mm vs. 15-20 mm), and the bars of the central feat-hers are less distinctive black.

Description of holotype

Upperparts: forehead black, grading to dark olive-brown crown with fine black vermiculations and buff shaft streaks on some feathers. Feathers of nape and mantle barred, black tip being followed by alternating broad orange-rufous and olivaceous bars separated by thin black lines. Lower back and rump similar but with the olivaceous zones wider, with some black vermiculations, and with olivaceous tip outside the most distal terminal bar. Humerals with inner vanes barred mahogany-red and black, often with a large black patch, and outer vanes fading to pale grey with fine rufous and dusky vermiculations near the mahogany-red outer edge, and shafts whitish. Rectrices deep chestnut (Auburn), with broad black sub-terminal bar and narrow cinnamon-white tip, the central feathers lighter brown with six indistinct blackish bars and some fine dusky vermiculations.

Wings: rounded, remiges dark brown, outer vanes with faint ochreous-orange marginal notches and vermiculations, which expand to form irregular pale bars on secondaries; tertials more greyish-brown, inner ones patterned like scapulars. Also greater wing-coverts resemble scapulars, but the middle coverts are fuscous-black with pale grey distal margin, and the smaller coverts fuscous with buffy white distal margin.

Face and underparts: sides of head diffusely marked orange-rufous (Amber Brown) and dusky with some small black spots and rather broad orange-rufous shaft streaks on the post-ocular part of the supercilium. Chin and throat uniform orange-rufous, the narrow olive-brown transition towards grey breast adorned with a black spot centrally on each feather. Breast and sides neutral grey with partly concealed large black spot centrally on each feather, most feathers on lower breast and sides also with white sub-marginal zone. Flanks rather diffusely mottled olivaceous grey and ochraceous with occasional black spots; belly buffy-white, downy; under tail coverts mainly greyish-olive with occasional black speckles and whitish terminal part.

Bare parts: bill scarlet, legs yellow, skin of the ocular area ochraceous-orange with rudimentary feathering.

Measurements (mm): flattened wing 130.8, tarsus 35.2, tail 57.5, exposed culmen 17.

Syntypes

ZMUC kat. no. 93.216 (sex not determined) and 93.217 (ad. female, with vascularised brood-patch), both with partial skeletons; collected 22 December 2000 and 12 January 2001, respectively. Both birds were collected in Mafwemiro Forest.

Variation

The three individuals are similar in all plumage characters, except that No. 93.216 has a more clear-cut facial pattern with prominent orange-rufous supercilium (from in front of eyes to side of nape), lore and anterior cheeks, the dark mottling being restricted to posterior cheeks, ear-coverts, malar and rictal stripes.

Measurements of all three individuals are given in Table 1, together with those of the nominate subspecies.

Etymology

The subspecific name refers to the diffusely mottled face and rather inconspicuous "necklace" compared with the nominate subspecies (see Fig. 1).

Habitat and population

Mafwemiro forest covers 32 km^2 at 1,600-2,200 m a.s.l. It is mostly mature forest with a canopy height of 25-30 m but some logging of *Podocarpus* has taken place on the top ridge and also some *Syzygium* has been taken out. Dominant tree species include *Albizia gummifera*, *Bridelia brideliifolia*, *Myrianthus holstii*, *Olea europaea*, *Phoenix reclinata*, *Polyscias fulva*, *Schrebera alata* and unidentified Rutaceae and Sapotaceae species in the low parts and *Aphloia theiformis*, *Podocarpus* spp., *Ocotea* spp., *Rinorea* sp. and *Syzygium* sp. on the ridges (N. Doggart & A. Perkin, *in litt.*). So far only the eastern parts, reachable from the Mbuga Mission, have been explored, during 10 days in March 2000, 14 days in May 2000, 14 days in December 2000/ January 2001 and six days in August 2001 (JK, and during the last visit also members of the Tanzania Forest Conservation Group).

Forest partridges were seen only on Chugu Hill in the north of the forest reserve. On 27 March 2000 two groups, four birds in each (probably pair with young), were seen. On 14 May 2000 one group of seven were seen, on 15 May three birds, on 18 December four birds were seen feeding near a stream, on 24 December two birds. On 2 January 2001 two adults were seen with four pulli. Judging from the few observations, the population density may be rather low. No birds were seen in two study sites in the southern (main) part of the forest.

The Udzungwa population, which is distributed at 1,350-1,900 m.a.s.l., has been estimated to number 3,700 birds (Dinesen *et al.* 2001).

Discussion

The new record might be taken as evidence that *Xenoperdix* is much more widespread than thought. The species normally runs away quietly when disturbed, and can therefore be difficult to detect, especially as it is alert in places with frequent human disturbance. Snares are being used in all forests where the forest partridge is found but the intensity of hunting is low (compared with other forests in the district) and mainly concentrated near the forest margins. The species may have been extirpated in some forests and small local populations may also have been overlooked. However, ornithological exploration has been quite intensive in the montane forests of central Tanzania in recent years (Dinesen *et al.* 2001, Fjeldså *et al.* unpublished). Nearly all forests (except small patches) have been visited in the Udzungwas and in the highlands north of the Great Ruaha Basin (Image, Iyungi in Uvidunda Mts, Mangalisa, Msanga and the large Uquiwa forest in the Rubehos, and two forests in Wota Mts W of

Mpwapwa). Thus, the forest partridge does not seem to be widespread and we are more inclined to believe that its distribution is disjunct.

A disjunct distribution is also suggested by the apparent morphological non-overlap between the two populations. The ornamental pattern on the face and throat varies greatly amongst the Oriental hill and wood-partridges, suggesting that a diversity of neutral alleles cause high plasticity in evolution of these ornaments.

Local distribution could be related to special but yet unknown habitat requirements. The species is known only from forests with *Podocarpus* trees but within each forest it is seen in places with a variety of different trees. The only universal habitat feature of places where it has been seen is a rather open understorey with scattered sedges (*Cyperus*) and ferns. Mature *Podocarpus* forest is found in Image forest (which is heavily logged but has a small undisturbed area in the north) and the southern part of Mangalisa forest, but in both these forests there is dense undergrowth of tall herbs, which may not be suitable for the partridge. Many highland forests are severely disturbed, by humans and elephants, and some may be secondary forests. The highlands are sometimes swept by large wildfires (most of them initiated by humans), which sometimes disturb considerable areas of evergreen forest.

The location of known *Xenoperdix* populations in mountains flanking the Great Ruaha Basin to the south and north could be related to long-term climatic predictability. Throughout the Pleistocene, these highlands may have been under a constant influence of warm humid winds from the Indian Ocean (Fjeldså & Lovett 1997, Burgess *et al.* 1998) and conditions may be particularly favourable in humid highlands bordering towards the intermontane basin, which acts as a local high pressure centre, with warm air rising up the mountain slopes. Several narrowly endemic taxa are found in this area, some of them restricted to one side of the Great Ruaha basin, others inhabiting highlands on both sides (Fjeldså *et al.* unpublished).

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Specimen record of Black-whiskered Vireo *Vireo altiloquus* in Peru is erroneous

by Thomas S. Schulenberg & Paul Salaman

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The Black-whiskered Vireo *Vireo altiloquus* breeds in coastal areas of southern Florida, USA, south through the Caribbean to islands off the coast of Venezuela, and winters in Amazonian Brazil; the true geographic extent of its wintering area, however, is poorly known (see Remsen 2001).

Some literature includes "Peru" or "northeastern Peru" as part of the non-breeding distribution of *Vireo altiloquus* (e.g. Ridgely & Tudor 1989, Parker *et al.* 1996). Recent authors appear to have followed Zimmer (1941), who accepted a Peru record for *Vireo altiloquus barbatulus* on the base of an entry in Gadow (1883) for a specimen of *Vireo calidris b V. barbatula* taken by Hauxwell at Chamicuros; Chamicuros is a site in the Peruvian portion of the Amazon basin, now in the department of Loreto (Stephens & Traylor 1983). The Hauxwell specimen was received at the then British Museum (Natural History) (now The Natural History Museum, Tring) from the Gould Collection (Gadow's specimen h; page 294). Zimmer did not examine the Chamicuros specimen himself; he accepted Gadow's reported identification ("Both *chivi* and *olivaceus* [including *flavoviridis*] were known to Gadow ... and it is not likely that a specimen of either would have been identified as *barbatulus*"). Zimmer merely updated the nomenclature from *Vireo calidris* (as used by Gadow and other authors of that period) to *Vireo altiloquus* (modern usage), and speculated as to which subspecies of *altiloquus* the Chamicuros specimen might represent.

There are no subsequent specimen records of *Vireo altiloquus* for Peru. The Chamicuros specimen stands out as particularly odd in that there also are no records of this species for Ecuador (Ridgely & Greenfield 2001) nor for Amazonian Colombia (Hilty & Brown 1986).

One of us (PS) re-located what we believe to be the Chamicuros specimen that Gadow reported as the Chamicuros record of *Vireo altiloquus*. This specimen, BMNH reg. No. 1881.5.1.2197, was taken at Chamicuros by Hauxwell and was received from the Gould Collection; it also carries a specimen label from the Gould Collection on which it is identified as *Vireo barbatula*. In all respects these details conform to those of the specimen reported on by Gadow as "*Vireo calidris b V. barbatula*." The specimen is *not* an example of a Black-whiskered Vireo, however, but clearly is a Yellow-green Vireo *Vireo flavoviridis*, a common migrant to Peru. Indeed, other labels on this specimen carry the correct identification and the specimen is housed among the series of *V. flavoviridis*. Additional data on this specimen are that it is labelled as a male and the date of collection is "IX/52 [September 1852]".

We are baffled that Gadow (1883) published this specimen with an incorrect identification, especially as he was clearly familiar with *Vireo flavoviridis* and reported another specimen from Peru under that name. Nonetheless, there is no specimen evidence that *Vireo altiloquus* occurs in Peru (or anywhere else, to our knowledge, in the western Amazon Basin). Paynter (1995) cited Pearson (1980) as the basis for the occurrence of *Vireo altiloquus* in the department of Ucayali, central Peru. Pearson included *Vireo altiloquus* in his Table 1 (pages 276-278). This table, however, is not a site list but rather is a generalized list of "long-range migrants in Amazonian Ecuador, Peru, and Bolivia". *Vireo altiloquus* does not appear in Pearson's census data on migrants at Yarinacocha, in the department of Ucayali, Peru (Pearson's Table 2: page 28), nor is it listed from Yarinacocha by O'Neill & Pearson (1974). Therefore, we see no reason to include Peru in the range of Black-whiskered Vireo.

Acknowledgments

We thank Douglas F. Stotz for calling the Paynter publication to our attention and Robert Prŷs-Jones for access to the ornithological collection of The Natural History Museum.

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A revision of the type specimens of the Spotted Nightjar *Eurostopodus argus* (Caprimulgidae)

by Nigel Cleere & Michael Walters

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The Spotted Nightjar is one of two Australian *Eurostopodus* nightjars and is the most widespread, occurring over much of the continent west of the Great Dividing Range (Cleere 1998, 1999, Higgins 1999, Holyoak 2001). Anomalies within the nomenclature of this nightjar were corrected by Hartert (1892) and later by Schodde & Mason (1981), who determined that the specific name should be *argus* rather than *guttatus*, with the latter becoming a synomym of the White-throated Nightjar *Eurostopodus mystacalis*, the other Australian *Eurostopodus* species.

Hartert (1892) described *Eurostopodus argus* and listed sixteen specimens deposited in The Natural History Museum, Tring, which therefore became the type material of the species. The specimens were not identified with their museum registration numbers, but were allocated a letter of the alphabet, followed by their collection locality and origin. Mathews (1918) selected specimen e as the type of *Eurostopodus argus*, an adult collected by Captain Sturt in South Australia, which he further designated as being from New South Wales, but incorrectly so (Schodde & Mason 1997). Warren (1966) listed BMNH 1888.10.3.16 as a syntype (which is either specimen h or i in Hartert's List) and stated that several other syntypes were in the collection. Schodde & Mason (1997) quoted specimen e, BMNH no. unspecified, as the lectotype and then stated that BMNH 1888.10.3.16 and all other BMNH specimens listed by Hartert (1892) were paralectotypes.

A new examination of the *Eurostopodus argus* material deposited in The Natural History Museum, Tring, reveals that Hartert (1892) clearly made some errors in documenting all of the specimens before him and that not all specimens listed in his work can be considered types, as stated by subsequent authors. Firstly, Hartert listed only one specimen collected by J.T. Cockerell in Queensland that was originally in the Tweeddale collection (specimen f), although there are actually two. He also listed two specimens from Derby, N.W. Australia, a male (specimen m) and a female (specimen n), collected and presented by Captain Bowyer Bower, but there are three, one male and two females. In both examples, it is impossible to know exactly which specimens were omitted, but the museum registers confirm that they were all present at the time and must, therefore, be considered types. Secondly, Hartert clearly described only the adult plumage, so an immature (specimen g) from N.E. Australia purchased by the museum and a pullus (specimen r) collected by Rev. G. Brown in Topaca, New Ireland cannot be regarded as types. As a result of our investigations, we can now put on record a complete list of the type specimens of the Spotted Nightjar:

Lectotype : BMNH 1846.5.22.91, adult, S. Australia, collected and presented by Captain E. Sturt. For lectotypification, see Mathews 1918, p. 233.

Paralectotype : BMNH 1845.11.7.36, adult, Australia, purchased from Sir G. Grey.

Paralectotype : BMNH 1869.11.16.12, adult, Australia, presented by E. Rishton.

Paralectotype : BMNH 1888.10.3.11, adult male, Australia, ex Tweeddale collection.

Paralectotype : BMNH 1888.10.3.14, adult female, Australia, ex Tweeddale collection.

Paralectotype : BMNH 1881.11.7.921, adult, Queensland, Australia, collected by J.T. Cockerell, ex Tweeddale collection.

Paralectotype : BMNH 1881.11.7.922, adult, Queensland, Australia, collected by J.T. Cockerell, ex Tweeddale collection.

Paralectotype : BMNH 1888.10.3.16, adult, Port Albany (= Somerset, Cape York, Australia), collected by C. Coxen, ex Tweeddale collection.

Paralectotype : BMNH 1888.10.3.53, adult, Port Albany (= Somerset, Cape York, Australia), collected by C. Coxen, ex Tweeddale collection.

Paralectotype : BMNH 1845.7.14.17, adult, Red Wallis' Islands, purchased from the Earl of Derby.

Paralectotype : BMNH 1842.1.13.12, adult, N.W. Australia, presented by Captain Chambers.

Paralectotype : BMNH 1887.5.2.48, adult female, Yabber Goody, near Derby, N. W. Australia, 26 June 1886, collected and presented by Captain Bowyer Bower.

Paralectotype : BMNH 1887.5.2.49, adult female, Mt. Anderson, south of Derby, N.W. Australia, 10 October 1886, collected and presented by Captain Bowyer Bower.

Paralectotype : BMNH 1887.5.2.50, adult male, Fitzroy R. Camp, Mt. Anderson, south of Derby, N.W. Australia, 5 November 1886, collected and presented by Captain Bowyer Bower.

Paralectotype : BMNH 1857.9.18.11, adult male, near the Norman River (17°40´S, 141°E), N.W. Queensland, Australia,16 April 1856, collected and presented by J. Elsey.

Paralectotype : BMNH 1857.10.28.75, adult male, Victoria River Depot (15°34´S,130°22´E), N.W. Australia, April 1856, collected and presented by J. Elsey.

Paralectotype : BMNH 1859.1.10.17, adult male, Shark Bay, Perons Peninsula, W. Australia, May 1858, collected by Dr. F.M. Rayner, surgeon on the H.M.S. Herald, and presented by the Admiralty.

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A further specimen of the White-fronted Swift *Cypseloides storeri*

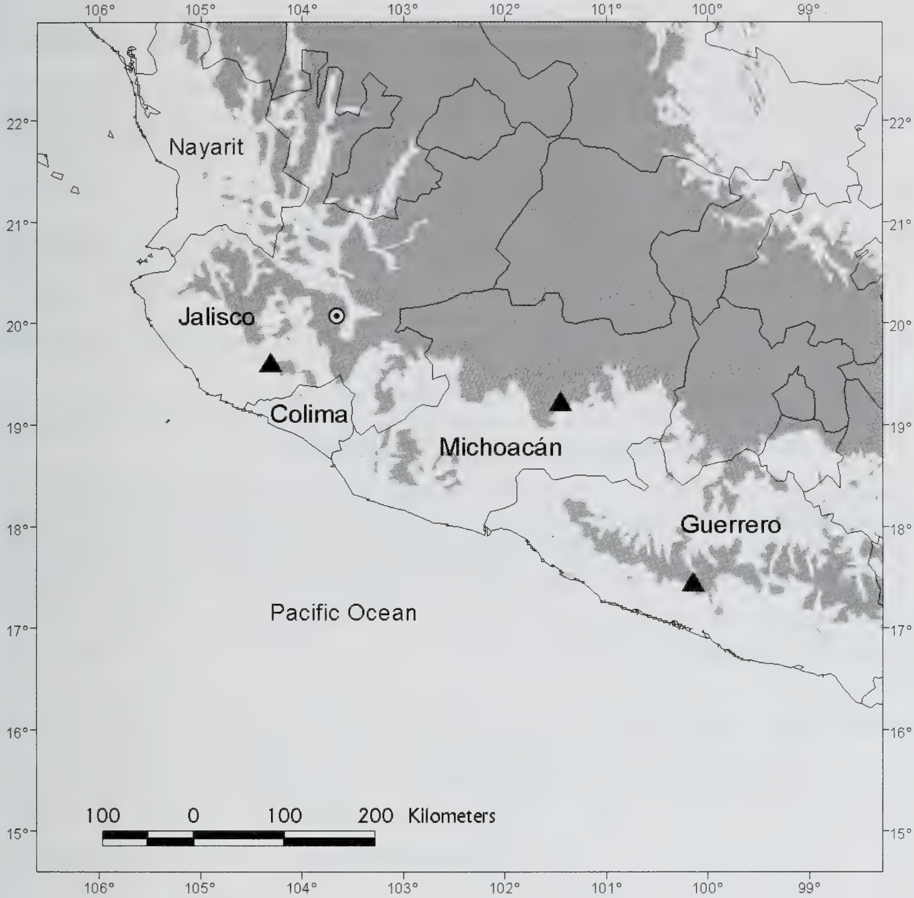
by Gabriela Ibáñez-Hernández, Hesiquio Benítez-Díaz,
A. Townsend Peterson & Adolfo G. Navarro S.

Received 8 November 2001

Since the description of the White-fronted Swift *Cypseloides storeri* (Navarro *et al.* 1992), its systematic position (Howell 1992, 1993, Sibley & Monroe 1993, AOU 1994, Peterson & Navarro 1993) and seasonal status (Howell & Webb 1995) have been questioned. Howell (1992, 1993) argued that given the very small series available, and the kind of multivariate analyses used by Navarro *et al.* (1992) for describing this new taxon, accepting it as a full species is "premature." Howell & Webb (1995) further asserted that until new information is available, even its breeding in Mexico is questionable. Chantler (1998) responded recently that the lack of available information argues strongly against its status as a resident.

In a recent visit to the collections of the Escuela Nacional de Ciencias Biológicas, Instituto Politécnico Nacional (ENCB), México City, a misidentified swift was discovered among several Black Swifts *Cypseloides niger*. The bird (ENCB 2827), a male, was collected 4.5 km N, 2 km W of Juanacatlán, Jalisco, Mexico (approx. 103° 40' N, 20° 3' W, elevation 2,360 m), southwest of Laguna Zacoalco. This locality lies *c*. 86 km northeast of the northernmost known record of the species (Navarro *et al*. 1993; Fig. 1) at Las Joyas Scientific Station, Jalisco. The bird was collected on 10 June 1990 by Martín Aguilar, in a mist net placed over a creek, surrounded by semiarid vegetation, and prepared as a study skin by G. Ibáñez-Hernández. The bird had no fat and was not moulting. Most importantly, its testes were enlarged (7 x 4 mm). Measurements (mm) of the dried skin are: wing chord 139.9, tail 46.5, and tarsus 16.4. The other known specimens of *C. storeri* were collected on 2 September (holotype, MZFC 3535, Guerrero, testes 3.4 x 1.5), 10-11 July (UMSNH 1265-1267), and between June and September (LNLJ uncatalogued; Navarro *et al*. 1993).

With these records, the seasonal occurrence of this species in Mexico is confirmed from at least June to September. The breeding condition of the ENCB specimen indicates that the species' status as a breeding bird, associated with deep canyons and waterfalls in the mountains of southwestern Mexico, is indeed correct (Navarro *et al.* 1992, 1993). The species has been listed as potentially threatened (Collar *et al.* 1992) and its areas of occurrence as priorities for conservation (Wege & Long 1995); its status as "data deficient" (BirdLife International 2000) should be retained, and the search for more data concerning life history of the species should be encouraged. Concerns about the validity of the species (Howell 1992, 1993, Howell & Webb 1995) now seem unfounded: the defining characters have been confirmed by two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Nayarit
Jalisco
Colima
Michoacán
Guerrero
Pacific Ocean
100 0 100 200 Kilometers

Figure 1. Map of specimen localities of the White-fronted Swift over a topographic map of southern Mexico depicting elevations higher than 1,250 m. Triangles indicate published records, dotted circle indicates the new locality reported in this contribution.

additional specimens since the original description of the species, and it now appears to be a breeding species in southwestern Mexico.

Acknowledgments

We appreciate the help of the late Dr. Ticul Álvarez for access to the ENCB bird collection. Valuable comments on the manuscript were provided by Charles Collins, Chris Feare, Fanny Rebón and Octavio Rojas.

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INSTRUCTIONS FOR AUTHORS

Authors are invited to submit papers on topics relating to the broad themes of taxonomy and distribution of birds. Descriptions of new species of birds are especially welcome and will be given priority to ensure rapid publication; they may be accompanied by colour photographs or paintings.

Submission may be made electronically to the Editor (feare_wildwings@msn.com): if large (>1mb) files are involved, e.g. to include illustrations, please contact editor first. Submission may also be made by post (to Prof. Chris Feare, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK); in this case send one hard copy and also a copy on a 3.5" disk, as **Word or Wordperfect files** for PC. Where possible, reviews, and returns of papers and reviewers' comments to authors, will be undertaken electronically.

Where appropriate half-tone photographs may be included and, where essential to illustrate important points, the Editor will consider the inclusion of colour illustrations (if possible, authors should obtain funding to support this inclusion of such colour plates).

Papers should follow the general style:

Title – lower case, centred, bold

Author(s) – lower case, centred, italics

Introductory section without a heading

Primary headings – lower case, centred, bold

Secondary headings – left justified, lower case, italics, bold

English names of animals should begin with capitals; give English name at first mention of every species.
Numerals – thousands separated by commas, e.g. 1,000, 12,000
Units of measurement, SI. Space between values and unit, e.g. 12.1 g
Statistical tests in the form: ($r_{28} = 3.12$, $P < 0.01$). ($C^2_3 = 7.31$, n.s.)
Citations to references in text: Author (Date); Author & Author (Date); if three or more authors – Author *et al.* (Date); or (Author(s) Date) etc.

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TABLE n

Description of table contents, including any abbreviations

	Column A	Column B
Row 1	Data	Data
Row 2	Data	Data

Legends for figures to be typed on one page at end of paper, in the form: Figure n. Text of legend, including key to symbols etc.

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MEMBERSHIP

All correspondence concerning membership should be addressed to the *Hon. Secretary*. For membership and subscription information, purchase of back numbers of the *Bulletin* and other Club publications see the inside rear cover of Vol. 122 (4), the Club News section of this issue, or the BOC website www.boc-online.org

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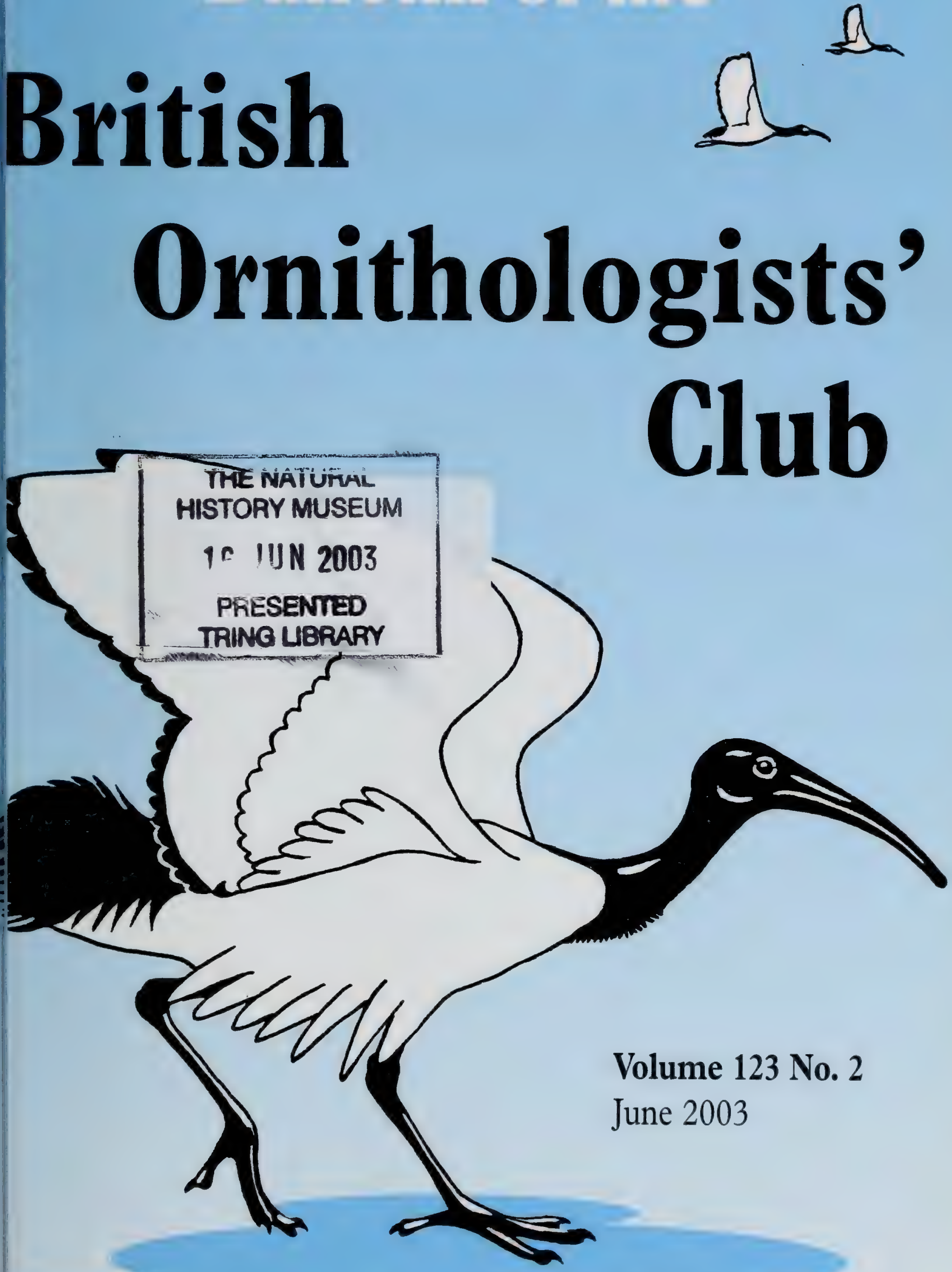

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Volume 123 No. 2
June 2003

MEETINGS are normally held in the **Sherfield Building** of **Imperial College**, South Kensington, London, SW7. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. [Limited car parking facilities can be reserved (at a special reduced charge of **£5.00**), on prior application to the Hon. Secretary].

The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about 8.00 pm.

Dinner charges were increased to **£18.50**, as from **1st January 2003.**

FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

Tuesday 24 June - Nigel Cleere on "*Goatsuckers, Frogmouths and Oilbirds*"**.**
Nigel is currently a research asistant at the Bird Group, Dept. of Zoology, The Natural History Museum, Tring, and is the assistant manager for Project Biomap, working on Colombian birds. He has had a special interest in nightjars for many years and has studied them in Europe, the Middle East, Africa and North and South America. He also has extensive museum experience, having examined all Caprimulgiform species and subscpecies in collections throughout Europe and North America. He is author of *Nightjars of the World*, and of numerous articles and notes on this family, and is currently preparing a nightjar photoguide. He has been a BTO 'A' ringer since 1974, ringing tens of thousands of birds of birds of over 300 species in many parts of the world, including Portugal, Israel, Kuwait, east, west and southern Africa. and Thailand. Late applications to the Hon. Secretary by **noon Friday 20 June,** at the very latest, please.

Tuesday 23 September - Dr. Jim J. Groombridge on *"Restoring rare honeycreepers in Hawaii: the cutting edge of bird conservation"*.
Jim is currently a Lecturer in Biodiversity Conservation at The Durrell Institue of Conservation, at the University of Kent. Having completed his first degree in Zoology from the University of Wales (1993) he worked for the Mauritius Wildlife Foundation (1993-1998) to supervise part of the introduction programme of the endangered Mauritius Kestrel. His PhD (University of London 2000) focused on the conservation genetics of Mauritius avifauna, and from June 2000 to November 2002 he led a major multi-species conservation project, in Hawaii, focussing especially on the critically endangered Hawaiian honeycreepers, on Maui.

*Applications to the Hon. Secretary by **9 September,** please.*

Tuesday 4 November - Professor Tim Birkhead on *"Darwin: Birds and Sexual Selection"*.
Tim Birkhead is professor of behaviour and ecology at the University Sheffield. Most of his research in the last ten years has been on sexual selection in birds, and on sperm competition in particular. His books *'Sperm Competition & Sexual Selection'* (1998) and '*Promiscuity'* (2000)
have summarised the recent developments in this active area of research. His research has taken him around the world, including the Canadian Arctic, Africa and North America. He is committed to the public understanding of science, teaches history and philopsphy of science and writes regularly for *New Scientist*, *BBC Wildlife*, *Natural History* and *The Independent*. His interests in birds, history and science are combined in his forthcoming book: *'The Red Canary'*.

*Applications to the Hon. Secretary by **21 October,** please.*

Future meetings - advance notice
Tuesday 2 December Amberley Moore and James Jobling - "*The unknown traveller - the ornithological collections of Louis Fraser*".

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2004, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA. UK. Tel/FAX:01730-825280 (or Email: mbcasement@aol.com).

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 123 No. 2 Published 13 June 2003

CLUB NEWS

Membership News. It is with deep regret that we report the recent deaths of: G.S. (Stuart) Keith (1965-2003), Max Nicholson CB, CVO (1934-81), and G.R. (Guy) Mountfort, O.B.E. (1951-2003) (**Hon Life Member**).

Hon. Life Member. In recognition for her tireless support for the Club, administering the Club publications at Tring, and especially the recent major sale of BBOC back-numbers, Mrs F.E. (Effie) War (1984-2003) has been awarded Honorary Life Membership of the Club.

The 912th meeting of the Club was held on Tuesday 5th November 2002, in the Sherfield Building Annexe, Imperial College. 28 Members and 13 guests attended.

Members present were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, I.R. BISHOP, Dr. K.B. BRIGGS, D.R. CALDER, Cdr M.B. CASEMENT RN, Professor R.A. CHEKE, D. GRIFFIN, C.A.R. HELM, G.P. JACKSON, M.C. JENNINGS, R.G. MORGAN, D.J. MONTIER, Mrs M.N. MULLER, P.J. OLIVER, M.L. PALING, Dr. R.P. PRŶS-JONES, R.J. PRYTHERCH, Dr. C. RYALL, R.E. SCOTT, T.R. SMEETON, S.A.H. STATHAM, N.H.F. STONE, C.W.R. STOREY, Miss R. TINGAY, Dr. J.F. WALSH, Dr. D.R. WELLS, and R.W. WOODS.

Guests attending were: Ms G. BONHAM, Mrs C.R. CASEMENT, J. EYRE, P. JENNINGS, Dr. P.J. JONES, Dr. C. MacCALLUM, Mrs M. MONTIER, C.A. MULLER, Professor I. NEWTON OBE FRS (*Speaker*), M. NICOLL, Mrs S. STONE, Mrs B. WALSH and R.W. WEBSTER.

After dinner, Professor Ian Newton gave an illustrated presentation entitled *Population limitation in birds: a review of the experimental evidence.* The following is a brief synopsis.

The breeding densities of birds can be limited by resources, such as food and nest sites, or they could be held at a lower level by natural enemies, such as predators, parasites or competitors. These limiting factors can operate in wintering or breeding areas. In this talk, the evidence for each of these factors limiting bird breeding densities was reviewed from the published experimental evidence. Of 26 experiments involving winter food provision (mostly on tits), 18 led to increased breeding densities the next spring, compared with control areas. Of four involving summer food depletion (all on forest insectivores), none led to decreased breeding densities. Of 46 studies on tree-cavity nesters, the provision of nest-boxes led to increased breeding densities in 43, each involving one or more species of hole-nesters. Of 17 experiments involving predator removal (mostly on ducks and gamebirds), 11 led to increased breeding density. Of four experiments involving the removal of parasites, all four led to increased breeding density.

Taken together, published experiments confirm that all potential external limiting factors have affected breeding density in one bird species or another. They also confirmed that the same species has been limited by one factor in certain areas or years, and by another factor in different areas or years.

The 915th meeting of the Club was held Tuesday 25th March 2003, in the Sherfield Building Annexe, Imperial College. 26 Members and 13 guests were present.

Members attending were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir Thomas BARLOW Bt. DSC, RN., I.R. BISHOP, Mrs D.M. BRADLEY, Ms D.V. BREESE, Cdr M.B. CASEMENT RN, I.D.

COLLINS, J.B. FISHER, D.J. FISHER, F.M. GAUNTLETT, D. GRIFFIN, C.A.R. HELM, K. HERON, G.P. JACKSON, D.J. MONTIER, Mrs A.M. MOORE, Mrs M.N. MULLER, Dr. R.P. PRŶ S-JONES, P.J. SELLAR, T.R. SMEETON, Dr. D.K. SNOW, P.W. SMITH, S.A.H. STATHAM, N.H.F. STONE and M. WALTERS (Speaker).

Guests attending were: Ms G. BONHAM, M. BRADLEY, Mrs C.R. CASEMENT, Dr. J.H. COOPER, Mrs B. FISHER, Mrs M.H. GAUNTLETT, Mrs J.A. JONES, Mrs M. MONTIER, P.J. MOORE, D. RUSSELL, Mrs S. SMITH, Mrs S. STONE, and R. WEBSTER

After dinner, Michael Walters gave an illustrated talk entitled "*Hypothetical Birds*". The following is a brief synopsis:

Many of the names described in the *Systema Naturae of Linnaeus* (1758, 1766) and Gmelin (1788-9) have never been identified with any known extant species. Both Linnaeus and Gmelin (neither of whom were ornithologists) based their bird names on descriptions which they translated from earlier works, the authors of which were most probably not ornithologists either, and whose accounts may not be entirely reliable. Some of the descriptions are so meagre as to be virtually impossible of identification. Others may represent obscure plumages, aberrant specimens, hybrids or artefacts. But some may represent extinct species. In *Catalogue of the Birds in the British Museum* (27 vols. 1874-1896), identifications were given for a great many of these names, though many were speculative. But no attempt was ever made comprehensively to list those species that had not been identified. There are also many other unidentified birds not to be found in the works mentioned.

Michael said he believed there to be somewhere approaching a thousand extinct or unidentified species and discussed, with illustrations, a number of these including: Dwarf Rhea, Steller's White Cormorant, Cream Coloured Goose, David's Swan, Painted Vulture, White Eagle, Genoese Eagle, Marco Polo's Crane, Bruner's Rail, Bougainville's Pigeon, King's White Pigeon, Albin's Lory, David Livingstone's Parrot, Rüppell's Red-winged Parrot, the West Indian Macaws, Levaillant's Black Coucal. Baber's Cuckoo Shrike, Painted Sunbird and Lesson's Kioea.

His presentation aroused considerable interest, and was followed by a lively question and discussion period.

ANNUAL GENERAL MEETING 2003

1. **The Annual General Meeting** of the British Ornithologists' Club was held in the Sherfield Building, Imperial College, London SW7 on Tuesday 29 April 2003 at 6 p.m. with Dr C.F. Mann in the Chair. 20 Members were present. Apologies were received from: I.R. Bishop, Professor R.A. Cheke, D. Griffin, Dr P.W.G. Salaman, R.A. Scott, N.H.F. Stone, Captain Sir Thomas Barlow, R.A. Price, Dr. R.P. Prŷs-Jones and Dr R.A. Chandler.

   The Minutes of the Annual General Meeting held on 30 April 2002, which had been published (*Bull. Brit. Orn. Cl.* 122: 161-162), were approved and signed by the Chairman.

2. **Chairman's report.** The chairman summarised the main points shown in the Trustees' Annual Report for 2002, drawing attention to the healthy financial situation, largely due to the generous legacy of the late Dr Philip Clancey, which helped cushion the losses due to the downturn in the stockmarket. He also highlighted the achievements of the Joint Publications Committee, chaired by Revd. Tom Gladwin, which now handles all publications of both the Union and the Club, apart from the journals. Although no publications appeared in 2002, much progress was made towards the publication of a number of titles, and five should appear in 2003. These include "*Why Museums Matter: Avian archives in an age of extinction*", which was published in March, as a Supplement to Bull BOC 123 (1), the *Bird Atlas of Uganda*, and three titles in the *BOU Checklist* Series.

   He paid tribute and gratitude to *Hon. Editor*, Prof. Chris Feare for his achievement in producing a larger than usual *Bulletin* in 2002 (320 pages), and for enhancing its reputation in the ornithological community; also to Mary Muller for her continuing work compiling the *Bulletin* index. In order to reduce the stock of back-numbers held at Tring, a special offer, for long runs, was launched by James Jobling, *Hon. Publications Officer*, which netted the Club over £6,000. This project involved a huge amount of photocopying, collating and packaging, for which the Club is deeply indebted to Mrs "Effie" Warr, and her husband (John). Progress with the electronic archiving of the *Bulletin* is proceeding well, and the website, under the capable management of Paul Salaman, is attracting an increasing number of "hits".

He thanked members of the Committee for their support, the Trustees of the Herbert Stevens Trust for their management of the Club's investment portfolio, also Pat Sellar and Ron Kettle for their help and expertise with the audio equipment at dinner meetings at Imperial College.

Finally, he paid tribute and thanks to Revd. Tom Gladwin, now stepping down as Vice-Chairman, and Bob Scott and James Jobling for their support as Members of the Committee; also to Francis Stone who had now turned over to James Jobling the role of *Hon. Archivist.*

3. **Trustees' Annual Report for 2002.** The *Hon. Secretary* pointed out that the Annual Report was now an integral part of the Annual Accounts, copies of which were before all Members present, and would be published in the June issue of *Bulletin* 123 (2). He drew attention to some of the highlights of this report, noting in particular the continuing (small) decline in membership, and called for any questions. There were none.

   The Annual Accounts for 2002. The *Hon. Treasurer* presented the accounts for the year ended 31 December 2001, and drew attention to the salient features, which were detailed in the paragraphs on finance in the Trustees' Report of Activities and Review of the Year.

   The adoption of the Accounts was proposed by David Montier, seconded by Amberley Moore, and approved by all present.

4. **The *Bulletin*.** The *Hon. Editor* said the additional pages that he had been allowed in Volume 122 had helped to clear some of the backlog of accepted papers that had accrued, and he hoped that this would lead to a shortening of the time between receipt of papers and publication. Towards the end of the year it was decided that the *Bulletin* should publish the proceedings of the conference *Why Museums Matter* as a supplement; this led to a flurry of activity by Nigel Collar and Clem Fisher, who had collated the papers and taken them through he refereeing process, and the *Hon Editor* with the aim of achieving rapid publication after such long delays. The *Hon. Editor* expressed his thanks to Nigel and Clem, and the authors of the papers, for expediting the latter stages of the process, allowing publication early in 2003. The *Hon Editor* also thanked "Effie" Warr, Mary Muller, Michael Casement, Eng-Li Green (our typesetter) and Crowes (our printer) for all their work during the year.

5. **Club Publications.** Tom Gladwin said that good progress was now being made with the *Bird Atlas of Uganda*, and publication should now be achieved before the year-end. Plans were now being progressed to move the stock of all publications to the storage facility at Peterborough, shared with the BOU.

6. **Election of Officers and Committee.** The Chairman said the proposed changes to the Committee were as published in *Bull. Brit.Orn. Cl.* 123 (1) pages 1-2:
   (i) Mrs M.N. Muller be elected as Vice-Chairman (Vice Revd. T.W. Gladwin)
   (ii) S.A.H. Statham, C.W.R. Storey and I.R. Bishop be elected vice R.E. Scott and J.A. Jobling who retire on completion of their 4-year terms of office, and Mrs M.N. Muller on her election as Vice-Chairman.

   There being no other nominations to the offices of Secretary and Treasurer, Commander M.B. Casement was re-elected *Hon. Secretary*, and D.J. Montier re-elected as *Hon. Treasurer*.

7. **Under any other business**, Mr M. Gauntlett voiced concern at the ageing membership profile of the Club and emphasised the need to attract younger members. It was agreed that recruitment was a problem, though the current policy of inviting young ornithologists as speakers to meetings was helpful in that PhD students often brought their friends and colleagues, as guests, and a proportion of these subsequently joined as members. The BOC website was also proving a useful means of recruitment. The Committee has the matter under regular review.

The meeting closed at 6.50 p.m.

BRITISH ORNITHOLOGISTS' CLUB
Founded 5 October 1892
Registered Charity No. 279583

TRUSTEES ANNUAL REPORT FOR 2002

List ofTrustees - Committee

Dr. C.F. MANN *Chairman* (2001)
Reverend T.W. GLADWIN *Vice-Chairman* (2001)
Cdr. M.B. CASEMENT, O.B.E., R.N. *Hon. Secretary* (1996)
D.J. MONTIER *Hon. Treasurer* (1997)
R.E.SCOTT (1998)
J. A. JOBLING (1999)
Professor R.A.CHEKE (2001)
Mrs M.N. MULLER (2001)
Dr P.G.W SALAMAN (2001)

Correspondence and enquiries to the Hon. Secretary, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA

Auditors and Independent Examiners - Porritt Rainey & Co., 9 Pembroke Road, Sevenoaks, Kent. TN13 1XR

Bankers - Barclays Bank plc, Dale House, Wavertree Boulevard, Liverpool, L7 9PQ

Constitution

The British Ornithologists' Club was founded in October 1892. It currently operates under Rules revised in 2000 and approved at a Special General Meeting on 31st October of that year. Members of the Committee, who are also the trustees of the Club, are listed above with the dates of their appointment. Committee members are elected for a term of four years, with the exception of the Honorary Secretary and Honorary Treasurer, who are both subject to re-election at each Annual General Meeting.

Objects OfThe Charity

The promotion of scientific discussion between Members of the British Ornithologists' Union and others interested in ornithology, and to facilitate the dissemination of scientific information concerned with ornithology, with a particular emphasis on avian systematics, taxonomy and distribution.

The Committee

The Committee met six times during the year. The Revd. T.W. Gladwin was re-elected as Vice-Chairman, for another year, until the 2003 AGM. The chief topics for discussions were the Club publications, their storage and distribution. These matters are now handled jointly with the British Ornithologists' Union (BOU), by the Joint Publications Committee (JPC). Meetings with the BOU were also held to explore the possibility of further close co-operation, by sharing future administration costs for both societies. The BOC website was launched in January 2001, mainly due to the commendable efforts and expertise of Dr. P.G.W Salaman, who was subsequently elected to the Committee and appointed Hon. Website Manager. Plans were progressed for the electronic archiving and marketing of the complete set of Bulletin BOC.

The Committee continues to be most grateful to the Trustees of the Herbert Stevens Trust Fund (Mr Nigel Crocker, Mr Peter Oliver and Mr Richard Price) for their time and expertise advising on the performance of the Fund.

Meetings

Eight evening meetings were held in 2002 at Imperial College, London. A total of 278 (199 members and 79 guests) attended these meetings, which represented an average attendance of 35. The programme of speakers during the year again covered a wide variety of ornithological subjects in both Britain and overseas, including Madagascar, the former Soviet Union, Papua New Guinea, the Chatham Islands and Bolivia. As for the past four years, the 30 April meeting following the AGM was in the form of a social evening, during which informal short talks and brief discussions were contributed by eight participants, on a range of topical subjects. Summaries of all these talks are to be found in the Club News section of the Bulletin. Following further cost increases by Imperial College, dinner charges for 2002 were increased to £18.

The Bulletin

Following the receipt of a large number of papers in 2001, the Committee approved the Editor's request for Volume 122 to be larger than usual, in order to move a backlog of papers awaiting publication and thereby to reduce the time between receipt and publication. As a result, Volume 122 contained 320 pages and 33 papers, including some longer ones that would have taken up a large proportion of a standard 64-page issue. Papers addressed many aspects of distribution, taxonomy and nomenclature and as usual reflected a wide geographical spread. These included descriptions of a new species of pipit from southern Africa, 11 new subspecies of babbler from Vietnam and two new subspecies of Kelp Gull, from Madagascar and from the subantarctic Indian Ocean. These papers were liberally illustrated with colour, continuing the trend set in 2001. In addition, two important papers discussed the gender of both specific and generic names of birds; comments received indicate a general welcoming of the clarification offered by these papers, but in some quarters the conclusions have been controversial.

For papers published in 2002, the interval between receipt and publication was 9 to 21 months, averaging 15 months, somewhat longer than in 2001. However, the average will hopefully reduce with the clearance of papers that emanated from the unusually large number, 60, of papers received in 2001.

In 2002, 37 papers were received, of which 20 have been accepted so far. Our move to Crowes as printer, and Alcedo as typesetter, in 2000 has led to the later stages of publication being completed electronically. In 2003 electronic submission and, as far as is practicable, electronic review will be encouraged.

As ever, grateful thanks are due to the reviewers who have given their time and expertise to ensure that the papers published in the Bulletin maintain the journal's quality; also to Eng-Li Green, of Alcedo Publishing, and Mike Dawson and his team at Crowes, our printers, for their continuing commitment to our quality and publishing schedule.

Mary Muller has again produced our comprehensive index of scientific names, Effie Warr has provided a wide variety of services and has prepared and distributed reprints, and Michael Casement has prepared the cover information and Club News. The "team" has done well!

Bulletin Sales

Sales to Institutional Subscribers totalled 128 copies/subscriptions,with 30 in the UK and 98 overseas (27 countries).Of the latter 38 were to the USA, 8 to Australia, 7 to Germany, and 4 each to Canada, Norway and South Africa. Figures include 8 free copies in the UK (to meet legal requirements and for copyright libraries) and 8 free copies/exchanges abroad. The Special Offer of sales of back-numbers in August/September 2002 proved a success. Fourteen orders (including two for complete sets) netted the Club a surplus of £6,276.

Other Publications

The BOC-BOU Joint Publications Committee (JPC), was formed in May 2002 under the chairmanship of Revd. T.W. Gladwin, comprising: Miss D.V. Breese, S.P. Dudley (Publications Manager), J.A. Jobling, Prof. J. Kear (Checklist Editor), D.J. Montier, and N.J. Redman.

This joint committee, with a rotating chaimanship, has assumed responsibility for the management and production of all British Ornithologists' Club and British Ornithologists' Union non-journal publications, including the Union's Checklist series. Three meetings were held in the period to 31 December 2002 and significant progress has been made throughout the year with a number of publications.

Conference Proceedings. The conference proceedings Why Museums Matter: Avian Archives in an Age of Extinction is to be published by the BOC as a supplement to the Bull. Brit. Orn. Cl. (in March

2003). The Committee is particularly grateful to Dr. N.J. Collar, Dr. C. T. Fisher and Prof. C. J. Feare for their efforts in finally securing publication of these important proceedings. The BOU's publication of the conference proceedings Climate Change and Coastal Birds has been generously supported by Northumbria Water and is also due to be published in 2003.

The print edition of the BOU publication Ecology and Conservation of Farmland Birds sold out in spring since when it has been available on CD.

Checklists. No new titles were published in the series during the year, but work continued on The Birds of Morocco and The Birds of Hispaniola, both due for publication in the first half of 2003. The Committee's Publications Manager also commenced work with the authors of The Birds of Príncipe, São Tomé and Annobón, the final manuscript now received and due for publication in late 2003. In addition to the above, the Committee inherited a list of some further 21 working titles which are overseen by the Checklist Series Editor. These are at various stages, from proposals under consideration to near completed manuscripts close to submission. Careful monitoring of this list, and the thorough assessment of future proposals, will ensure that our limited resources are directed at titles that the two organisations are confident match our publishing criteria. The Committee is grateful to Janet Kear and Steve Dudley for their continued management of the individual titles and progress of this important series.

Bird Atlas of Uganda. Work continued on this. All material has now been received, final layouts are being prepared, and publication is expected in the autumn of 2003.

Membership.

As at 31 December 2002, there were 549 paid-up Members - 295 with addresses in the U.K, and 254 overseas (44 countries). The Club welcomed 18 new Members, including two previous non-Member Subscribers, taking advantage of the Rule change to join as full Members.

But it is with great regret that the Committee reports the deaths in the past year of seven Club Members: B. Gray (1968-2002, Committee 1977-80, Vice-Chairman 1980-83, Chairman 1983-86), J.D. Lindsay (1968-71, 1989-2002), F.P. Littlemore (1982-2002), Prof. Dr. Wilhelm Meise (2001-2002, ex-subscriber), Professor Dr. K.H. Voous (1976-2002), M.A. Walmsley (1986-2001), and V.J. Wood (1985-2001).

There were seven resignations, and 16 were removed under Rule (24), resulting in a net decrease in membership of 12, during the year.

The Hon. Secretary continues to prepare a Members' Address List annually, and duplicated copies of the 2002 Membership, including e-mail addresses (if known) are available, free of charge, for any Member requesting a copy.

Risk Review. The Committee has reviewed the major risks to which the Club is exposed, and operates systems that are designed to mitigate those risks

Finance

Total assets of the Club stood at £343,887 at 31st December 2002, compared with £310,124 at the end of the previous year, an increase of £33,763. This can be accounted for by three items, two positive and one negative. The largest positive component was a generous legacy of £49,056 from the estate of the late Dr. P.A. Clancey, who was an Honorary Life Member, having joined in 1938. This bequest to the Club was described as being for the support and benefit of the Bulletin and, consequently, falls to be treated as a Restricted Fund. Secondly, there was a surplus of income over expenditure on Unrestricted Funds of £14,516, on which there are comments below; while the third, the negative item, was a further fall of £31,077 in the market value of the Club's unit trust investments.

Investments

Total investments of £237,020 shown in the Balance Sheet includes £187,174 for the Herbert Stevens Fund which is split between three charity unit trusts managed on the Club's behalf by independent trustees who report regularly to the Committee. The market value of these investments fell by £30,853 and the small Barrington Trust Fund by £224, a drop overall of 14% during another very difficult year for stock markets worldwide. Nevertheless, the result was less severe than the fall in the UK All Share

Index, which plummeted by almost 25%. This year's decline, however, coming on top of a loss of 8.7% (£20,978) in 2001, has unfortunately eliminated the gains of the previous three years, though the value is still standing some £26,000 above the original cost of the current holdings.

Despite falling market values, income from the unit trusts has again exceeded £10,000, to give a yield on the opening value at 1st January 2002 of about 4.7%. As there is not expected to be a need to draw on the capital itself in the short term, the Committee has taken the view that the best course is to stay invested at present rather than withdraw investments at current levels. The Clancey legacy, received in July 2002, has been invested for the time being in a one-year, fixed rate Building Society deposit, also included in the Balance Sheet as an investment, and is currently earning interest of 4.65% per annum.

Financial results for the year ended 31st December 2002

Total income for the year was £89,258, or £40,202 excluding the Clancey legacy. Subscriptions showed a decline of about £350, while total investment income produced a slight increase, interest on the Clancey legacy offsetting falling rates on the other deposit accounts. The special sales offer of back-numbers of the Bulletin proved very successful, giving an income of £8,334 which obviously will not recur.

Bulletin costs of £12,589 are £1,200 higher than the previous year, largely as a result of including more colour plates. As part of the planned co-operation on publishing with the BOU, arrangements were made to share the costs of a small storage unit to hold publications and Club archives, and this largely accounts for the increase in Administration costs. With publications continuing to take longer to complete than anticipated, overall expenditure shows little change from the previous year, though the year's results benefited substantially from the one-off promotion of Bulletin back-numbers, which, after associated expenses, mainly photocopying to fill in gaps of the earlier Bulletin runs and substantial postage bills, boosted the surplus by nearly £6,300.

Trustees' Responsibilities

Under the Charities Act 1993, the trustees are required to prepare a statement of accounts for each financial year which give a true and fair view of the state of affairs of the charity at the end of the financial year and of the incoming resources and application of resources in the year. In preparing the statement the trustees are required to :

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable accounting standards and statements of recommended practice have been followed, subject to any material departures disclosed and explained in the statement of accounts;
- prepare the financial accounts on the going concern basis unless it is inappropriate to presume that the charity will continue its operations.

The trustees are responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the charity and to enable them to ensure that any statement of account prepared by them complies with the regulations under section 41(1) of the Charities Act 1993. They are also responsible for safeguarding the assets of the trust and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Approved and signed on behalf of the Trustees

C. F. Mann
Chairman

Date: 29th April 2003

BRITISH ORNITHOLOGISTS' CLUB

BALANCE SHEET — 31st December 2002

	Notes	2002 £	2002 £	*2001* *£*	*2001* *£*
INVESTMENTS					
At Market Value	2		**237,020**		*219,097*
CURRENT ASSETS					
Stock of Publications		**100**		*100*	
Cash at Bank and in hand		**2,222**		*2,314*	
Cash on Deposit		**111,377**		*94,801*	
Prepayments		**312**		*375*	
Other Debtors		**862**		*654*	
		114,873		*98,244*	
CURRENT LIABILITIES					
Subscriptions in advance		**(3,376)**		*(3,728)*	
Creditors falling due within one year		**(4,630)**		*(3,489)*	
			106,867		*91,027*
TOTAL ASSETS			**343,887**		*310,124*
FUNDS					
Unrestricted					
Designated	3		**15,000**		*10,000*
Other	4		**269,843**		*291,404*
			284,843		*301,404*
Restricted	5		**59,044**		*8,720*
			343,887		*310,124*

Approved and Signed on behalf of the Trustees

C F Mann
Chairman

Date: 29th April 2003

STATEMENT OF FINANCIAL ACTIVITIES — 31st December 2002

	2002 Unrestricted £	2002 Restricted £	2002 Total £	*2001* *Total* *£*
INCOMING RESOURCES				
SUBSCRIPTIONS				
Members	**7,051**	**-**	**7,051**	*7,302*
Institutional subscribers	**2,916**	**-**	**2,916**	*3,046*
Income Tax recoverable under Gift Aid & Deeds of Covenant	**575**	**-**	**575**	*552*
	10,542	**-**	**10,542**	*10,900*
LEGACY RECEIVED	**-**	**49,056**	**49,056**	*-*

DONATIONS		**64**	**-**	**64**	*38*
INVESTMENT INCOME					
Herbert Stevens Trust Fund		**10,332**	**-**	**10,332**	*10,350*
Barrington Trust Fund		**36**	**-**	**36**	*37*
Interest received		**3,534**	**1,268**	**4,802**	*4,517*
		13,902	**1,268**	**15,170**	*14,904*
SALES OF PUBLICATIONS					
Bulletin					
Back numbers, including special sales offer		**8,334**	**-**	**8,334**	*-*
Offprints		**218**	**-**	**218**	*694*
Other publications		**566**	**-**	**566**	*981*
		9,118	**-**	**9,118**	*1,675*
MEETINGS		**5,248**	**-**	**5,248**	*4,884*
OTHER INCOME		**60**	**-**	**60**	*9*
TOTAL INCOME		**38,934**	**50,324**	**89,258**	*32,410*
RESOURCES EXPENDED					
CHARITABLE EXPENDITURE					
MEETINGS					
Room and equipment hire, speakers' expenses, etc.		**1,623**	**-**	**1,623**	*1,630*
Restaurant		**5,170**	**-**	**5,170**	*5,391*
SPONSORSHIP 13th Earl of Derby Exhibition Catalogue		**-**	**-**	**-**	*1,500*
BOC BULLETIN					
Production, printing and distribution		**12,589**	**-**	**12,589**	*11,348*
Computer software		**-**	**-**	**-**	*1,099*
Costs related to special sales offer of back numbers		**2,058**	**-**	**2,058**	*-*
OTHER PUBLICATIONS					
Purchases		**-**	**-**	**-**	*100*
Future Publications		**65**	**-**	**65**	*930*
Publicity, postage and packing		**80**	**-**	**80**	*163*
ADMINISTRATION	6	**2,833**	**-**	**2,833**	*2,076*
TOTAL EXPENDITURE		**24,418**	**-**	**24,418**	*24,237*
EXCESS OF INCOME OVER EXPENDITURE		**14,516**	**50,324**	**64,840**	*8,173*
Reduction in value of investments		**(31,077)**	**-**	**(31,077)**	*(20,978)*
		(16,561)	**50,324**	**33,763**	*(12,805)*
TOTAL FUNDS brought forward at 1st January 2002		**301,404**	**8,720**	**310,124**	*322,929*
TOTAL FUNDS at 31st December 2002		**284,843**	**59,044**	**343,887**	*310,124*

NOTES TO THE ACCOUNTS — 31st December 2002

1. ACCOUNTING POLICIES

a) Basis of Accounts. The Financial Statements are prepared under the historical cost convention as modified by the inclusion of investments in the Herbert Stevens and Barrington Trust Funds at market values. They are also prepared in accordance with the Financial Reporting Standard for Smaller Entities (effective June 2002) and follow the recommendations in Accounting and Reporting by Charities: Statement of Recommended Practice Issued in October 2000.

b) Investments and Cash Deposits. The Herbert Stevens and Barrington Trust Funds are invested in quoted charity unit trusts and included as investments in the Balance Sheet at year-end market values. Income from these funds and from cash deposits shown in the Balance Sheet under Current Assets is included in Incoming Resources in the Statement of Financial Activities on a receipts basis. A legacy received during the year from the estate of the late Dr P A Clancey has been placed in a one year fixed rate Building Society deposit account which forms part of the total of investments in the Balance Sheet. Interest on this deposit account has been brought into the Statement of Financial Activities on an accruals basis.

c) Subscriptions
Subscriptions for the current year and any arrears are included in Incoming Resources in the Statement of Financial Activities. Subscriptions received in advance are carried forward in the balance sheet as current liabilities.

d) Expenditure is accounted for on an accruals basis.

e) Depreciation
Depreciation is calculated to write off fixed assets over their expected useful lives at an annual rate of 10% on cost.

f) Publications
The cost of publications is written off in the Statement of Financial Activities as incurred except for a nominal stock value of £100 carried in the Balance Sheet.

2. INVESTMENTS - at market value

	2002 **£**	*2001* *£*
UNRESTRICTED FUNDS		
Herbert Stevens Trust Fund	**187,174**	*218,027*
Barrington Trust Fund	**846**	*1,070*
RESTRICTED FUNDS		
Clancey Bequest	**49,000**	–
	237,020	*219,097*

All investments are held in the UK.

3. UNRESTRICTED DESIGNATED FUND
for future publications

	2002 £
Balance at 1st January 2002	10,000
Designated during the year	5,000
Balance at 31st December 2002	**15,000**

4. OTHER UNRESTRICTED FUNDS

	General Fund £	Herbert Stevens Trust Fund £	Barrington Trust Fund £	TOTAL £
Balances at 1st January 2002	72,307	218,027	1,070	291,404
Reduction in value of investments during year	–	(30,853)	(224)	(31,077)
Surplus of income over expenditure	14,516			14,516
Transfer to Unrestricted Designated Fund	(5,000)	–	–	(5,000)
Balances at 31st December 2002	**81,823**	**187,174**	**846**	**269,843**

5. RESTRICTED FUNDS

	Clancey Bequest £	Publications Fund £	Bird Atlas of Uganda Fund £	TOTAL £
Balances at 1st January 2002	–	5,247	3,473	8,720
Legacy received during the year	49,056	–	–	49,056
Interest - gross	943	196	129	1,268
Balances at 31st December 2002	49,999	5,443	3,602	59,044

a. The Clancey bequest was donated by the late Dr P A Clancey with the request that it should be used to support and enhance the Club's Bulletin.
b. The Publications Fund is available to finance Club publications other than regular issues of the Bulletin.
c. The Bird Atlas of Uganda Fund is specifically to assist with financing the production and publication of the Atlas.

6. ADMINISTRATION EXPENSES include;	**2002** **£**	*2001* £
Audit and Independent examination fees	**550**	*550*
Depreciation of tangible fixed assets	**–**	*10*

7. REIMBURSEMENT OF EXPENSES
Committee members are reimbursed for expenses incurred by them on behalf of the Club.
The amount reimbursed during the year was **£1,320** *(2001 £2,364)*

INDEPENDENT EXAMINERS REPORT TO THE TRUSTEES OF THE BRITISH ORNITHOLOGISTS' CLUB

This is a report in respect of an examination carried out on the accounts set out on pages 7 to 12 under Section 43 of the Charities Act 1993 and in accordance with directions given by the Charity Commissioners under Sub-section 7(b) of that Section.

Respective responsibilities of trustees and independent examiners

As described on page 4 the Trustees are responsible for the preparation of the accounts and they consider that Charities Act 1993 Section 43(2) (audit requirement) does not apply. It is our responsibility to carry out procedures designed to enable us to report our opinion.

Basis of Opinion

This report is in respect of an examination carried out under section 43 of the Charities Act 1993 and in accordance with the directions given by the Charity Commissioners under section 43(7)(b). An examination includes a review of the accounting records kept by the charity trustees and a comparison of the accounts presented with those records. It also includes a review of the accounts and making such enquiries as are necessary for the purposes of this report. The procedures undertaken do not constitute an audit.

Opinion

No matter has come to our attention in connection with our examination which gives us reasonable cause not to believe that in any material respect:

(i) accounting records have been kept in accordance with Section 41 of the Charities Act 1993; or
(ii) the accounts accord with those records; or
(iii) the statement of accounts complies with the accounting requirements of the Charities Act 1993.

No matter has come to our attention in connection with our examination to which, in our opinion, attention should be drawn to enable a proper understanding of these accounts.

Porritt Rainey & Co.
Porritt Rainey & Co.
Chartered Accountants

29th April 2003

BOC PUBLICATIONS

Back numbers of the Bulletin of the British Ornithologists' Club (BBOC) are also available, generally as originals, although many early volumes can only be supplied as facsimiles or photocopies. Details of these and all other publications can be obtained on request from the Publications Officer.

PUB. A. AVIAN SYSTEMATICS AND TAXONOMY (1992), ed. Dr J. F. Monk. BBOC 112A (Centenary Vol.). ISSN 0007-1595.
Basic Price £15. Price incl. postage UK/Europe £17, worldwide £19.

PUB. B. BIRDS: DISCOVERY AND CONSERVATION –100 YEARS OF THE BRITISH ORNITHOLOGISTS' CLUB (1992), ed. Dr D. W. Snow. ISBN 1-873403-15-1.
Basic Price £5. Price incl. postage UK/Europe £8, worldwide £10.

PUB.C. AVIAN TAXONOMY FROM LINNAEUS TO DNA. Papers presented at a joint meeting between the British Ornithologists' Club and the Linnean Society of London held on 23 March 1996. BBOC 117(2)- June 1997 (reprinted 1998). ISSN 0007-1595
Basic Price £7. Price incl. postage UK/Europe £9, worldwide £10.

PUB. D. WHY MUSEUMS MATTER: AVIAN ARCHIVES IN AN AGE OF EXTINCTION. Papers from a conference of this title held at Green Park, Aston Clinton, and workshops at the Natural History Museum, Tring, 12-15 November 1999 (2003), eds. N. J. Collar, C. T. Fisher & C. J. Feare. BBOC 123A – Supplement. ISSN 0007-1595
Basic Price £18. Price incl. postage UK/Europe £21, worldwide £23.

OCCASIONAL PUBLICATIONS SERIES.

OP1. EXTINCT AND ENDANGERED BIRDS IN THE COLLECTIONS OF THE NATURAL HISTORY MUSEUM (1994), by Alan Knox & Michael Walters. Ed. Dr J. F. Monk. ISBN 0 9522886.
Basic Price £28. Price incl. postage UK/Europe £31, worldwide £33.

OP2. MANUSCRIPTS AND DRAWINGS IN THE ORNITHOLOGY AND ROTHSCHILD LIBRARIES OF THE NATURAL HISTORY MUSEUM AT TRING (1997), by Frances E. Warr. ISBN 0 9522886 13.
Basic Price £13.50. Price incl. postage UK/Europe £15.50, worldwide £17.50

OP3. AVIAN EGG-SHELLS: AN ATLAS OF SCANNING ELECTRON MICROGRAPHS (1997), by Dr Konstantin Mikhailov. ISBN 0 9522886 21.
Basic Price £15. Price incl. postage UK/Europe £19, worldwide £21.

OP4. TYPE SPECIMENS OF BIRD SKINS IN THE UNIVERSITY MUSEUM OF ZOOLOGY, CAMBRIDGE, UK (1999), by C. W. Benson. ISBN 0 9522886 3.
Basic Price £28. Price incl. postage UK/Europe £32, worldwide £34

ERRATUM

Correction of a section in the paper "Notes on some genera and subgenera of rails (Rallidae)"

by John Penhallurick

Unfortunately, the version of the above-mentioned paper that was printed in *Bull. Brit. Orn. Cl.* 123(1): 33-45 (2003) was an earlier version of that paper, containing incorrect information, rather than the revised version that I later sent to the editor.

In the published version, the following statement was made:

Neave (1940: Vol. 4, p. 114) indicates that *Sarothrura* Heine, 1890, is also itself preoccupied by *Sarothrura* Hasselt, 1823, *Algemeene Konst- en Letterbode*, (20), p. 317. (Pisces).

In the revision, this text was replaced by the following:

An entry in Neave (1940: Vol. 4, p. 114) might be thought to indicate that *Sarothrura* Heine, 1890, is also itself preoccupied:

> *Sarothrura* Hasselt, 1823, *Algemeene Konst- en Letterbode*, (20), p. 317. (Pisces).

One should note that even if van Hasselt's name did preoccupy Heine's 1890 name, one could still invoke ICZN Art. 23.9 (1999: 27 - 28), and declare van Hasselt's 1823 name a *nomen oblitum*, as a senior unused synonym, and Heine's 1890 name as a nomen protectum.

However, with the kind assistance of Dutch colleagues, I found that Neave was wrong. van Hasselt's text reads:

> De Monacanthus Geographicus van Perron bevindt zich onder mijne verzameling en twee anderen, waarvan, ne afgebeeld is Seb. T. Tab. 24 No. 18 en Gronov. Tab. 6 No. 191 F. 5, die ik den naam gaf van Sarothrura en eene tweede niet afgebeelde M. inornatus genoemd.

Oscar van Rooselaar has kindly provided the following translation:

> The Monacanthus Geographicus of Perron finds itself in my collection and two others, of which one is illustrated [in] Seb. T. Tab. 24 No. 18 and [in] Gronov. Tab. 6 No.191 F. 5, which I gave the name Sarothrura and a second not illustrated named M. inornatus.

It is easy to see how compilers of *Nomenclators* of generic names were misled by the capital letter of *Sarothrura* to think that van Hasselt was proposing a generic name. In context, however, it is clear that he was proposing *sarothrura* as the name of a species of *Monacanthus*. It is presently a junior synonym, but I do not know of which species. A search of various websites of fish names and synonyms yielded no hits. Peculiarities in van Hasselt's names have created problems elsewhere, and have led to Kottelat (1987).

Thus there is no justification whatsoever for the new generic name *Daseioura* that I proposed in the version published in vol. 123: 133-45, and the names published on page 40 containing *Daseioura* should all revert to *Sarothrura*. I maintain, however, my argument that Slender-billed Flufftail *S. watersi* should be allocated to a distinct genus, *Lemurolimnas* Salomonsen 1934.

Acknowledgements

I would like to thank Oscar van Rootselaar for his assistance, and also Dr. M.van Oijen, the Curator of Fish at the Leiden Museum, and Mr. H. Adema of Natuur & Boek for their assistance to Oscar.

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The *Hon. Editor* apologises for this error; the revised paper was received after the original version had gone to press and the "in press" copy was not replaced.

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New records of birds from the summit of Cerro Guaiquinima, Estado Bolívar, Venezuela

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Cerro Guaiquinima, located in the Paragua river basin in the Estado Bolívar, is one of the largest isolated sandstone mesas of the Pantepui region, with an estimated summit area of 1,096 km^2 (Mayr & Phelps 1967, Berry *et al.* 1995). It lies between the eastern and western tepui clusters, isolated from them respectively by the basins of the Caroní and Paragua rivers. No ornithological accounts of Cerro Guaiquinima have yet been published. Floristic and palaeoecological data have been reported by Steyermark & Dunsterville (1980), Rull (1991), and Berry *et al.* (1995). Herpetological accounts have been provided by Donnelly & Myers (1991) and Mägdefrau *et al.* (1991).

The summit of Cerro Guaiquinima was first explored ornithologically by the topographer, Félix Cardona, who reached it in October 1943 and returned in June-

July 1944, obtaining a collection of 208 bird skins of 40 species collected above 1,000 m altitude. A year later, in January-February 1945, an ornithological expedition by the Colección Ornitológica Phelps made an important bird collection of 416 specimens of 60 species from the upper slopes (above 1,000 m) and summit of the mountain. All these collections were made in the south-western corner of Cerro Guaiquinima. These data were used in biogeographical analyses by Mayr & Phelps (1967) and Cook (1974) with the assumption that they provided fairly complete knowledge of the Guaiquinima avifauna.

Cerro Guaiquinima was not further explored until February 1990, when ornithologists from the American Museum of Natural History (Jeffery Woodbury and ROP) and Colección Ornitológica Phelps (MLR) visited its summit in an expedition sponsored by the Fundación para el Desarrollo de las Ciencias Físicas, Matemáticas y Naturales (FUDECI). A general description of this expedition has been reported elsewhere (de Bellard Pietri 1990), but the ornithological results of the expedition have not yet been reported in the literature. Two base camps were established in the north-eastern and north-central parts of the summit respectively. The position of Camp 1 was 5°50'00"N, 63°40'00"W at an elevation of 1,030 m while Camp 2 was located at 5°57'46"N, 63°28'20"W and 1,150 m altitude; a detailed description of these camps can be found in Donnelly & Myers (1991). The expedition collected 145 specimens of 52 species and a few additional species (including two new to the mountain) were recorded visually or by vocalizations.

Ten years later, as part of a biogeographical study of the Pantepui avifauna, a group of ornithologists (JPE, CJS & IJCF) visited the south-western corner of the tepui, setting up camp between 20 and 30 March 2000 at a locality close to the summit collecting sites used between 1943 and 1945. The base camp (West Aberaima Camp: 5°46'59"N, 63°47'07"W, 1,300 m) was located on the summit 1 km west of the Río Aberaima Canyon and gave access to dense humid low forest on a sandstone outcrop, gallery forests and a *Stegolepis* (Rapateaceae) meadow. A total of 40 specimens of 20 species were collected and a further 25 species were seen or heard.

The latter two expeditions recorded birds based on observations and collection using both shotguns and mist nets. In addition, 114 tape recordings, equivalent to 4½ hours of audio tape, were made by the 2000 expedition. Tape recordings will be archived at the Library of Natural Sounds (LNS), Cornell University, Ithaca, New York. The specimens are deposited in the Colección Ornithológica Phelps (COP), American Museum of Natural History (AMNH), Museo de Biología de la Universidad Central de Venezuela (MBUCV) and Museo de la Estación Biológica Rancho Grande (EBRG). Subspecies are indicated when determined. A museum acronym indicates where voucher specimens are deposited.

Here we report on 47 species recorded for the first time from the summit of Cerro Guaiquinima by the 1990 FUDECI expedition and the 2000 expedition, ten of which were considered members of the Pantepui avifauna by Mayr & Phelps (1967); these are denoted with the symbol § in the main text. After the 1943-45 fieldwork, the total number of species known from the summit of Cerro Guaiquinima was 66.

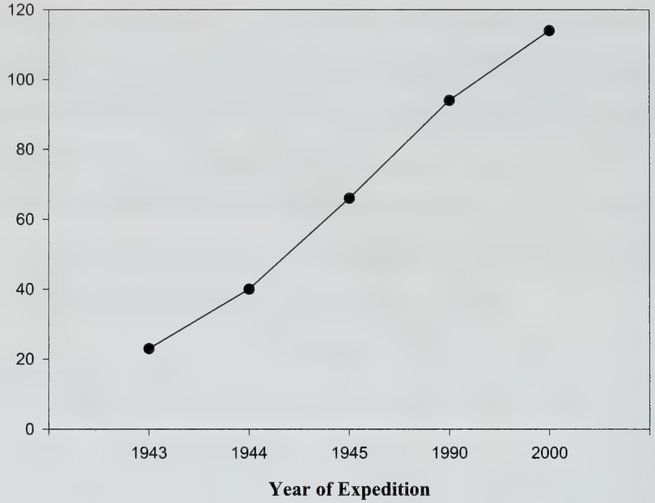

Figure 1. Species accumulation curve showing the increase in ornithological knowledge over time for Cerro Guaiquinima: cumulative number of species recorded by consecutive ornithological expeditions is used as an indicator of ornithological knowledge.

The 1990 FUDECI expedition added 27 species to the summit avifauna over 19 man days, whilst the 2000 expedition found a further 20 new species in 30 man days. A species accumulation curve produced from the results of the five expeditions that have been made to Cerro Guaiquinima (Fig. 1) shows that knowledge of the Pantepui avifauna is far from complete, as has been pointed out elsewhere (Dickerman & Phelps 1982, Barrowclough *et al.* 1995, 1997). A complete list of birds known from the summit and upper slopes of Cerro Guaiquinima is included in the Appendix.

Species accounts

LITTLE TINAMOU *Crypturellus soui*

One was heard one hour before first light, probably in gallery forest, and on another occasion one was heard and tape-recorded an hour after dawn in dense humid forest at the base of a rock outcrop, both near the West Aberaima Camp. This species has been recorded in Pantepui at upper elevations of 1,280 m on Cerro Urutaní (Dickerman & Phelps 1982), 1,300 – 1,600 m on the south-west slopes of Ptari-tepui and at 1,220 m on the north slope of Cerro Camani (COP specimens).

TURKEY VULTURE *Cathartes aura*

Pairs and single birds were seen quartering over the summit vegetation on three occasions close to West Aberaima Camp and within one hour of midday. All birds showed the white nape patch characteristic of the resident subspecies *ruficollis*. The species is widespread in Venezuela.

SWALLOW-TAILED KITE *Elanoides forficatus*
Pairs or single birds were observed hunting over various types of forest canopy near the West Aberaima Camp on four occasions.

BICOLOURED HAWK *Accipiter bicolor*
One immature was observed carefully from a distance of 20 m when it landed briefly on an interior forest perch in dense humid forest near the West Aberaima Camp. The bird was larger than Plain-breasted Hawk *A. ventralis* (at least 30 cm from crown to tail tip when perched) and dark grey above with a creamy-white belly, thighs and undertail coverts. A large *Accipiter* seen on several occasions flying to and from a small patch of trees in the same area, twice with small prey items as if to a nest, was probably also this species. Likewise, a tape recording of an unseen *Accipiter* calling from the same group of trees closely resembles *Accipiter bicolor* vocalizations from Costa Rica (Ross & Whitney 1995).

ROADSIDE HAWK *Buteo magnirostris*
A pair appeared to be on territory in gallery forest near West Aberaima Camp: one was seen and tape-recorded displaying in a high flight 300 m above gallery forest, a pair was seen flying together in the same place and one was heard there on another occasion.

BLACK-AND-WHITE HAWK EAGLE *Spizastur melanoleucus*
One was observed for 30 min from West Aberaima Camp at a distance of *c.* 1 km. It was displaying over tall humid forest in the canyon of the Río Aberaima. The bird soared in circles above the canopy, gaining height. From 300 m up it executed a very fast, shallow dive over the canyon, then gained height once more and was lost among the clouds.

LITTLE CHACHALACA *Ortalis motmot*
At least one pair heard 1.5 h after dawn in dense humid forest at the base of a rock outcrop near West Aberaima Camp. The birds appeared to be over 300 m away.

SPIX'S GUAN *Penelope jacquacu*
One was heard vocalizing from gallery forest near West Aberaima Camp. It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945).

§FIERY-SHOULDERED PARAKEET *Pyrrhura egregia*
Flocks were commonly seen at Camp 1; a male, body mass 66 g, with undeveloped testes and no moult was collected (COP). This species is found on many of the eastern tepuis, but this is the first record west of the Río Caroní (Mayr & Phelps 1967). The specimen collected in Guaiquinima corresponds to the subspecies *obscurus*, which is widely distributed in the eastern tepuis with the exception of Roraima (Meyer de Schauensee & Phelps 1978).

RED-AND-GREEN MACAW *Ara chloroptera*

Daily sight records of two pairs at West Aberaima Camp. They were always seen flying to and from the cliffs of the canyon of the Río Aberaima, perhaps to feeding or to roosting sites. They were observed in the 1945 Phelps Expedition on the south-western slope of the mountain but were not previously reported in the literature (William H. Phelps field notebooks).

§TEPUI PARROTLET *Nannopsittaca panychlora*

Heard or seen every day at West Aberaima Camp. The birds were always flying fast and high either singly or, more usually, in groups of two to five, often so high that they were hidden by low cloud. Except for two observations at 1000 h and 1400 h, flying birds were recorded mainly between 0620 h (20 minutes after dawn) and 0730 h. They occasionally appeared to land in dense humid forest at the top of a rock outcrop. Nine voucher tape recordings were made and identification of the birds was confirmed by comparison of sound spectrograms with recordings made by David Ascanio-Echeverría and Gustavo A. Rodríguez in the eastern tepuis of the Gran Sabana.

ORANGE-WINGED PARROT *Amazona amazonica*

A small group appeared to be resident in gallery forests near West Aberaima Camp where noisy flocks of three to nine were seen daily. The species is widespread in the lowlands and has also been recorded at 1,100 m on Auyan-tepui (Gilliard 1941, COP specimens).

SQUIRREL CUCKOO *Piaya cayana*

A male was tape-recorded and collected (COP) at the edge of dense humid forest at the base of a rock outcrop near West Aberaima Camp. The bird, body mass 69 g, had an unossified skull and undeveloped testes and was in wing, tail and body moult.

TROPICAL SCREECH-OWL *Otus choliba*

A male and female were mist-netted alongside a small stream near Camp 2. The male (AMNH), body mass 119 g, had developed testes and showed no moult. The female (MBUCV) had a body mass of 153.4 g. The specimens belong to the *crucigerus* subspecies rather than the Pantepui form *duidae* reported for Duida, Jaua, and La Neblina (Chapman 1931, Phelps 1977, Willard *et al.* 1991). The subspecies *crucigerus* is widely distributed in lowland South America (Marks *et al.* 1999) and has also been recorded on the summit of Cerro Yapacana at 1,200 m (Chapman 1931).

STYGIAN OWL *Asio stygius*

At least one pair was heard or observed daily at dawn and dusk in a mosaic of forest and *Stegolepis* meadow north of West Aberaima Camp. Vocalizations were of two types: a) a series of 10-20 low rhythmic hoots (*whoop*) delivered at an interval of 5.8 sec, represented by examples 1, 2 and 5 on Hardy *et al.* (1999); and b) a cat-like wail (*wherr* or a thinner *week*) similar to, but lower-pitched than example 3 on Hardy *et al.* (1999). The latter (tape-recorded twice) was given spontaneously throughout the one to two hours before dawn and the first hour or two after dusk, and the calls were sometimes strung together into a series of screams: *wher-wher-wher-wher*. The hoots were only given from dense vegetation in response to playback of the wails and were only definitely heard from one of the birds. Upon playback one or other of the birds would approach the recordist and pass low over his head, often beating the wings together below the body to produce a loud, hollow, knocking sound. The birds were never seen or heard in daylight and activity seemed to decline as the full moon waned. Copulation was observed in a tree at the edge of gallery forest one clear evening with a three-quarter full moon at 1900 h (20 minutes after dark). The pair flew out of humid forest and perched 5-6 m up (1 m from the top) in a sparsely leaved tree at the edge of the open *Stegolepis* meadow. Copulation lasted at least 5 sec and was accompanied by loud shrieks. This is a rare and local owl species (Hilty & Brown 1986) previously known from four scattered localities in Venezuela (Meyer de Schauensee & Phelps 1978, plus unpublished specimens from Los Palmares, Estado Trujillo, (COP 73156), and Misión Ocamo, Amazonas, (EBRG 7751).

§**BAND-WINGED NIGHTJAR** *Caprimulgus longirostris*
An unsexed bird (MBUCV), body mass 52 g, was mist-netted at a waterfall in a small stream at Camp 2. This specimen corresponds to the *roraimae* subspecies which is widely distributed in the Pantepui region (Willard *et al.* 1991, Medina-Cuervo 1992).

§**RORAIMAN NIGHTJAR** *Caprimulgus whitelyi*
A female was mist-netted across a stream near Camp 1. The specimen, body mass 47 g, was in light body moult with a developed ovary and a highly enlarged oviduct. To confirm identification, the specimen (AMNH 10470) was checked by ROP and compared to skins in the AMNH collection. This Venezuelan endemic was previously known from Roraima, Ptari-tepui, Urutaní, Jaua and Duida (Meyer de Schauensee & Phelps 1978, Dickerman & Phelps 1982, Cleere & Nurney 1998). This specimen from 1,030 m represents the lowest published altitude as well as the northernmost record for this species.

§**TEPUI SWIFT** *Cypseloides phelpsi*
This species has been included in a previous list for Guaiquinima (Willard *et al.* 1991), but we have been unable to ascertain the source, despite an exhaustive revision of museum material and field notebooks. It is a widespread inhabitant of Pantepui (Meyer de Schauensee & Phelps 1978). Flocks totalling 15-80 birds were seen every day over the West Aberaima Camp during March 2000. Several aerial matings were observed in which the pairs copulated on the wing for about three seconds, spiralling down from 50 m to 10 m above the ground before parting. Five voucher tape recordings of flight calls were made.

WHITE-COLLARED SWIFT *Streptoprocne zonaris*
As with the previous species, we consider the basis for previous inclusion of this species in the Guaquinima avifauna (Willard *et al.* 1991) to be doubtful. Flocks of

150-600 were seen every day over the canyon of the Río Aberaima. On 25 March 2000, several larger flocks totalling at least 1,400 birds were wheeling at great height over the Río Aberaima canyon. Three voucher tape recordings were made.

§**WHITE-TIPPED SWIFT** *Aeronautes montivagus*
Flocks of 5-30 were seen every day in the area of West Aberaima Camp, often flying low over the *Stegolepis* meadows. Three voucher tape recordings were made and a female, body mass 21 g, with a granular ovary and no moult was collected (COP). This species is locally distributed in the upper tropical and subtropical zone of Venezuela: in Pantepui it is known from Auyan-tepui, Duida, Yapacana, Urutaní and La Neblina (Meyer de Schauensee & Phelps 1978, Willard *et al.* 1991).

WHITE-NECKED JACOBIN *Florisuga mellivora*
A female, body mass 6.2 g, with no moult was mist-netted in the forest near Camp 1 (COP). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945).

WHITE-CHINNED SAPPHIRE *Hylocharis cyanus*
A male, body mass 3.2 g, with no moult was mist-netted in scrub near Camp 1 (COP).

SAPPHIRE-SPANGLED EMERALD *Amazilia lactea*
A female, body mass 4.5 g, with moderately enlarged ovaries and light body moult was mist-netted at Camp 2 (AMNH). Previously known from Sarisariñama, Auyan-tepui and Cerro Perro on the Río Paragua (Meyer de Schauensee & Phelps 1978).

PLAIN XENOPS *Xenops minutus*
An unsexed individual, body mass 10.5 g, was mist-netted in the forest near Camp 1 (COP). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945).

GUIANAN SLATY ANTSHRIKE *Thamnophilus punctatus*
Three males showing no moult were captured in mist nets in forest near Camp 1 (MBUCV, COP, AMNH). The body masses of two were 21 and 19 g. Two were found in forest and one in streamside cane.

BLACK-CHINNED ANTBIRD *Hypocnemoides melanopogon*
Two males with undeveloped testes and no moult and body masses 16.5 and 19 g were collected in forest near Camp 1 at 1,030 m (COP). This appears to be the highest elevation at which this species has been encountered: two specimens from the Wilhemina Mountains, Suriname at 700 m (FMNH) may be the highest records previously known (Mort Isler, pers. comm.). Four specimens from 660 m in the Serranía de Tapirapecó (MHNLS) are the highest previous records for Venezuela.

BLACK-THROATED ANTBIRD *Myrmeciza atrothorax*
Two females were collected at Camp 1 (COP, AMNH). One had granular ovaries and was moulting the primaries and secondaries, while the other showed no moult and had a body mass of 14.5 g.

SCALE-BACKED ANTBIRD *Hylophylax poecilinota*
One male and two females were taken in forest near Camp 1 (AMNH, COP). None showed signs of moult; of the two specimens examined for gonadal development, one female had developed ovaries and body mass 17.5 g and the male had undeveloped testes and body mass 17 g. The other female had a body mass of 16 g. This species had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the summit.

WHITE-PLUMED ANTBIRD *Pithys albifrons*
One unsexed bird showing no moult was captured in a mist net at Camp 1 (COP). It had previously been collected by Cardona in 1943 at 500 m on the south-western slope of Cerro Guaiquinima but this is the first record from the summit.

RUFOUS-CAPPED ANTTHRUSH *Formicarius colma*
An unsexed bird, body mass 44 g, with no moult was mist-netted in forest near Camp 1 (AMNH). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the summit. Generally a lowland species, it is also known from Aprada-tepui and Auyan-tepui at 1,000 and 1,100 m respectively and Paurai-tepui at 860-1,000 m (COP specimens).

§**RUFOUS-CROWNED ELAENIA** *Elaenia ruficeps*
Three specimens, two females (COP), body masses 15.5 and 17.5 g, with granular ovaries and one unsexed (EBRG), body mass 18 g, were collected in scrub at Camp 1. This species is distributed in eastern Colombia, north and central Brazil, the Guianas and southern Venezuela, where it reaches the slopes of the tepuis (Meyer de Schauensee & Phelps 1978, Hilty & Brown 1986).

GOLDEN-CROWNED SPADEBILL *Platyrinchus coronatus*
A female, body mass 8.8 g, with no moult was captured in a mist-net in forest at Camp 1 (MBUCV). This species had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the summit.

ROYAL FLYCATCHER *Onychorhynchus coronatus*
Two males and a female were captured in mist nets in forest at Camp 1 (AMNH, COP). One male, body mass 14.5 g, showed moult of the primaries and secondaries, while the other, body mass 16 g, showed extensive symmetrical tail moult and limited

forecrown moult. One male had undeveloped gonads. The female, body mass 13.5 g, had undeveloped gonads.

§RUFOUS-TAILED TYRANT *Knipolegus poecilurus*
Single birds were seen on several occasions at West Aberaima Camp and a male, body mass 14.6 g with developed testes, completely ossified skull and no moult, was collected (COP). Lone birds were typically observed perched in the treetops at the edge of gallery forest where they looked around actively for insects whilst periodically flicking up both wings together over the back. One was also observed as part of a mixed flock together with Swainson's Flycatcher *Myiarchus swainsoni* and Pearly-vented Tody Tyrant *Hemitriccus margaritaceiventer*. The Rufous-tailed Tyrant is distributed in the upper tropical and subtropical zones from Venezuela to Bolivia and Brazil (Meyer de Schauensee & Phelps 1978). It is represented in Pantepui by a handful of records for some fifteen tepuis. The male collected in Guaiquinima, though darker than any other specimen of the species deposited at COP, is tentatively assigned to the *salvini* subspecies; colour differences might be attributed to foxing in the older material, as is suspected for other recent collections (Dickerman & Phelps 1982, Lentino *et al.* 1998).

BRIGHT-RUMPED ATTILA *Attila spadiceus*
One to three were heard on several occasions and tape-recorded in tall humid forest in the canyon of the Río Aberaima, east of West Aberaima Camp.

GREYISH MOURNER *Rhytipterna simplex*
A female, body mass 34 g, with a granular ovary was captured in a mist-net in forest near Camp 1 (COP). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the tepui summit.

TROPICAL KINGBIRD *Tyrannus melancholicus*
Two specimens were captured in scrub near Camp 1 (COP). One was a male, body mass 41 g, with a completely ossified skull and worn plumage. The unsexed specimen had a body mass of 39 g.

THRUSH-LIKE SCHIFFORNIS *Schiffornis turdinus*
A male, body mass 28 g, with moderately enlarged testes and no moult was mist-netted at forest near Camp 1 (AMNH). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the tepui summit.

GOLDEN-HEADED MANAKIN *Pipra erythrocephala*
A male, body mass 10.5 g, with undeveloped testes, a completely ossified skull and no moult was captured in a mist net at Camp 1 (COP). It had previously been collected on the south-western base of Cerro Guaiquinima (Comején Camp, 370 m: Phelps Expedition, February 1945) but this is the first record from the tepui summit.

§ORANGE-BELLIED MANAKIN *Lepidothrix suavissima*

A male, body mass 8.5 g, with enlarged testes, a completely ossified skull and no moult was collected in a mist-net at the forest edge at Camp 1 (COP). This species is a locally common inhabitant of the Pantepui region of southern Venezuela, and northern Guyana and Brazil (Meyer de Schauensee & Phelps 1978, Ridgely & Tudor 1994).

WHITE BELLBIRD *Procnias alba*

The distinctive song of this species was often heard by ROP on the mountain summit below Camp 2. On one morning at least three individuals were singing. Many tape-recordings were made.

BARN SWALLOW *Hirundo rustica*

One was seen flying north-east over *Stegolepis* meadow at West Aberaima Camp on 20 March 2000. This was followed by fourteen flying north on 21 March and a single bird on 25 March 2000. No further migration was observed from 26 to 30 March.

GREY-CHEEKED THRUSH *Catharus minimus*

A male, body mass 28 g, with undeveloped testes and no moult was mist-netted in forest near Camp 1 on 24 February 1990 (MBUCV). This is the only record of this Neotropical migrant for Cerro Guaiquinima.

§PALE-EYED THRUSH *Platycichla leucops*

This species was common in forest near Camp 1; highly vocal flocks of 5-10 males and females were observed by MLR in the forest canopy and sub-canopy. Two males, body masses 60 and 67 g, and an unsexed bird of 60 g were collected (MBUCV, EBRG, AMNH). This is a species of the subtropical zone distributed from Colombia to Bolivia, including Venezuela, Guyana and northern Brazil (Meyer de Schauensee & Phelps 1978) and is widespread in the Pantepui region (Willard *et al.* 1991).

NORTHERN WATERTHRUSH *Seiurus noveboracensis*

Two males, body masses 14 and 14.5 g, with completely ossified skulls were collected along a small stream at the forest edge at Camp 1 in February 1990 (COP). This Neotropical migrant is found throughout Venezuela during the boreal winter; within Pantepui it has been collected on Auyan-tepui and Paurai-tepui at 460 and 860 m respectively (Gilliard 1941, COP specimens). The species is widespread elsewhere in Venezuela from sea level to over 2,000 m.

BURNISHED-BUFF TANAGER *Tangara cayana*

Birds were regularly seen by ROP in low shrubs and small trees around Camp 2.

GREEN OROPENDOLA *Psarocolius viridis*

A lone bird flew over an open meadow between two patches of forest near West Aberaima Camp in the twilight before dusk. A single *Psarocolius* song was heard in the same place several days later.

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Appendix. Complete list of birds known from the summit and upper slopes (above 1,000 m) of Cerro Guaiquinima. No symbol indicates that voucher specimens exist; where specimens do not exist * = sight record; # = sound record; + = voucher tape-recording. Taxonomic order is based on the Check-list of North American Birds (American Ornithologists' Union 1998).

*Crypturellus soui+, Cathartes aura**, *Elanoides forficatus**, *Accipiter bicolor**+, *Buteo magnirostris**+, *Spizastur melanoleucus**, *Ortalis motmot#, Penelope jacquacu+, Odontophorus gujanensis, Columba fasciata, Pyrrhura egregia, Ara chloroptera**+, *Nannopsittaca panychlora**+, *Amazona amazonica**+, *Piaya cayana, Otus choliba, Glaucidium brasilianum, Asio stygius**+, *Caprimulgus longirostris, Caprimulgus whitelyi, Cypseloides phelpsi**+, *Streptoprocne zonaris**+, *Aeronautes montivagus, Phaethornis bourcieri, Doryfera johannae, Campylopterus duidae, Florisuga mellivora, Colibri delphinae, Colibri coruscans, Lophornis pavonina, Thalurania furcata, Hylocharis cyanus, Amazilia lactea, Amazilia tobaci, Heliodoxa xanthogonys, Trogon personatus, Capito niger, Aulacorhynchus derbianus, Veniliornis cassini, Piculus rubiginosus, Cranioleuca demissa, Xenops minutus, Dendrocincla fuliginosa, Sittasomus griseicapillus, Glyphorynchus spirurus, Xiphorhynchus pardalotus, Thamnophilus punctatus, Myrmotherula haematonota, Herpsilochmus roraimae, Hypocnemoides melanopogon,* *Myrmeciza atrothorax, Hylophylax poecilinota, Pithys albifrons, Formicarius colma, Chamaeza campanisona, Myrmothera simplex, Elaenia ruficeps, Elaenia pallatangae, Mecocerculus leucophrys, Mionectes macconnelli, Phylloscartes nigrifrons, Pogonotriccus chapmani, Zimmerius gracilipes, Hemitriccus margaritaceiventer, Platyrinchus coronatus, Onychorhynchus coronatus, Myiophobus roraimae, Hirundinea ferruginea, Contopus fumigatus, Knipolegus poecilurus, Attila spadiceus+, Rhytipterna simplex, Myiarchus swainsoni, Tyrannus melancholicus, Schiffornis turdinus, Procnias alba#, Rupicola rupicola, Pipra cornuta, Pipra erythrocephala, Lepidothrix coronota, Lepidothrix suavissima, Hylophilus sclateri, Hirundo rustica*, Thryothorus coraya, Henicorhina leucosticta, Microcerculus ustulatus, Catharus minimus, Platycichla flavipes, Platycichla leucops, Turdus ignobilis, Setophaga ruticilla, Seiurus noveboracensis, Myioborus cardonai, Basileuterus bivittatus, Tachyphonus surinamus, Tachyphonus phoenicius, Piranga flava, Thraupis palmarum, Euphonia xanthogaster, Chlorophonia cyanea, Tangara guttata, Tangara gyrola, Tangara cayana*, Tangara velia, Chlorophanes spiza, Cyanerpes caeruleus, Cyanerpes cyaneus, Coereba flaveola, Atlapetes personatus, Zonotrichia capensis, Pitylus grossus, Icterus chrysocephalus, Psarocolius viridis*.*

N.B. *Chaetura cinereiventris*, *Dysithamnus mentalis* and *Notiochelidon cyanoleuca* are considered part of the Guaiquinima tepui montane avifauna by Willard *et al.* (1991), yet there appear to be neither specimens nor sight records of the latter two to support their inclusion, whilst the former has only been recorded from Salto Guaiquinima at an altitude of 300 m. Although their presence on Guaiquinima would not be unlikely, we prefer not to include them here. Similarly, Ridgely & Tudor (1989) mention the presence of *Myioborus miniatus* on Cerro Guaiquinima (discussing similar species to *Myioborus cardonai*), but there are no records of this species for this tepui.

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A new extinct species of snipe *Coenocorypha* from Vitilevu, Fiji.

By Trevor H. Worthy

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The Fijian archipelago (320 islands, 18,270 km^2) has the largest area of land in the Central Pacific (Pernetta & Watling 1979). It would have been considerably larger when sea level was more than 100 m lower during Pleistocene glaciations and Vitilevu was linked with Vanualevu (Watling 1982, Gibbons 1985). Vitilevu is the oldest island in the archipelago, with rocks of the Yavuna Group of late Eocene to early Oligocene age (Rodda 1994). While there may have been land associated with these older rocks, emergent land was certainly present during the deposition of the Wainimala Group (late Oligocene-middle Miocene) and probably has been present continuously since about 16 million years ago (Chase 1971, Rodda 1994). Fiji therefore has a terrestrial biota older than any other Pacific oceanic landmass except New Zealand or New Caledonia and so may be expected to have a well-developed endemic faunal component.

The modern vertebrate fauna of Fiji is characterised by the absence of terrestrial mammals, as in other Pacific islands. Birds dominate the extant fauna but there is also a diverse herpetofauna of frogs (2 spp), iguanas (2 spp), geckos (10 spp; 4 presumed to be introduced by people prehistorically), skinks (12 spp), and snakes (2 spp) (Pernetta & Watling 1979, Watling & Zug 1998). Indigenous mammals are restricted to six species of bats (Flannery 1995). This Fijian fauna with its endemic frogs (*Platymantis* spp.), iguanas (*Brachylophus vitiensis, B. fasciatus*), and a snake (*Ogmodon vitianus*) has few equivalents on typical oceanic islands. The granitic Seychelles islands, with endemic snakes, lizards and amphibians but no terrestrial mammals (Stoddart 1984), are however similar to Fiji in this respect.

Throughout the Pacific, the fossil record of birds has revealed many extinct species and range reductions of others. In New Zealand, 39 species became extinct on the main North and South islands (Turbott 1990, Worthy 1999), but there are 66 extinct taxa known from the whole New Zealand archipelago (Worthy & Holdaway in press). Gigantism and flightlessness, as shown in New Zealand by the 11 species of moa (Dinornithiformes), large rail-like birds (Aptornithidae: *Aptornis*, two species), and waterfowl (Anatidae: *Cnemiornis*, two species), are common evolutionary trends on mammalian predator-free islands (Worthy & Holdaway 2002). The Hawaiian archipelago lost more than half its bird diversity (James & Olson 1991, Olson & James 1991), including at least four species of large, flightless, browsing anatids, called moa-nalos. Elsewhere in the Pacific, often up to half the species in the fossil record were found to be extinct, as in the Marquesas (Steadman 1989a, Steadman & Rolett 1996), Easter Island (Steadman 1995), Henderson Island (Wragg & Weisler 1994), Society Islands (Steadman 1989a), Samoa (Steadman 1994), and on the Tongan and Cook Island groups (Steadman 1989a, 1993, 1995). Amongst the extinct taxa are many species of rails, megapodes, columbids and parrots (Balouet & Olson 1987, Steadman 1987, 1989b, 1992, Steadman & Zarriello 1987). A similar history of avifaunal extinction has also been found in the western Pacific in New Caledonia (Balouet & Olson 1989) and there are indications of them in Micronesia (Steadman & Intoh 1994).

A total of 69 indigenous land bird species are known historically from the Fijian archipelago (Watling 1982). Vitilevu, which is the largest island, has the greatest diversity with 47 land birds. Some 56% of these land birds are endemic (Watling 1982), yet few described species are unusual or aberrant, which is unusual in avifaunas from older islands. It is even more unusual for an oceanic island to apparently have so few historical extinctions, there being only two, the Barred-wing Rail *Nesoclopeus poecilopterus*, globally extinct, and the Wandering Whistling-duck *Dendrocygna arcuata* whose population was extirpated in the late nineteenth century (Watling 1982).

Unlike the rich archaeological and palaeontological records from New Zealand and many other places in the Pacific, there are few indications of the prehistoric fauna from Fiji. An extinct *Ducula* and a megapode were recorded from an archaeological site on Lakeba (Lau Group) (Gibbons 1985, Balouet & Olson 1987, Steadman 1989b) and a megapode was reported from Naigani Island off the eastern coast of Vitilevu (Best 1981, van Tets 1985: 198). Both archaeological faunas were deposited by Lapita people at about 2,900-2,600 CAL yrs BP and therefore date to the earliest colonisation of Fiji by people (Anderson & Clark 1999).

The first fossil deposits in Vitilevu were revealed in 1999 (Worthy *et al.* 1999). They provided a spectacular assemblage of extinct species, including a terrestrial crocodilian (n. gen. et. sp.), a tortoise, a giant iguana (n. gen. et. sp.), and a giant frog (*Platymantis megabotoniviti*) (Worthy 2001a, Worthy *et al.* 1999, Molnar *et al.* in press, Pregill & Worthy 2003). The fossil avifauna was no less spectacular, with gigantism taking its own unique course in Fiji to produce huge pigeons and megapodes. Apart from an extinct endemic scrubfowl (*Megapodius amissus*) there was a giant megapode *Megavitiornis altirostris* that rivalled the New Caledonian *Sylviornis* in size (Worthy 2000). More unexpected, there was an equally giant flightless pigeon and a very large volant species of *Ducula* (Worthy 2001b). The new giant pigeon is the first such, flightless, pigeon reported from the Pacific and was of similar size to the Dodo *Raphus cucullatus*. Other extinct birds include a large rail with a long, probing, ibis-like bill, a small teal *Anas* sp., and a snipe. The last is the subject of this paper. Fossil material collected by the author has been deposited in the collections of the Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.

Study site

The discovery of the fossils described herein is a result of the Indo-Pacific Colonisation Project at the Department of Archaeology and Natural History, Australian National University, Canberra (coordinated by A. J. Anderson), investigating the human colonisation of Fiji and its environmental consequences. As part of this project, I searched caves for fossil vertebrate remains, aided by the Fiji Museum (Worthy & Anderson 1999).

Despite fossil faunas being recovered from several localities, fossil snipe bones were found in only a single cave site, Vatuma Cave, c. 12 km south of Nadi (Map Reference: L28/647020, edition 1, 1992; 17° 52' 57"S, 177° 28' 29" E) in Vitilevu. The fossils were in clay sediments accumulated around boulders at the base of a 10 m deep shaft inside the large cave entrance. The faunal composition and the fragmented nature of the remains suggest the assemblage was accumulated by an avian predator, possibly the Peregrine *Falco peregrinus* (Worthy *et al.*, in press). This assemblage was inferred to pre-date human occupation of the area as there was no midden debris (mollusc shells, pottery, or charcoal) in the sediment matrix containing the fossils, despite its abundance in sediments elsewhere around the site. Also, this was the only avian predator-accumulated assemblage of prehuman age located during the project, the other sites being all of pitfall origin.

Methods

Abbreviations

Institutions

AIM, Auckland Institute and Museum, Auckland, New Zealand (NZ); CM, Canterbury Museum, Christchurch, NZ; MNZ, Museum of New Zealand Te Papa Tongarewa, Wellington (formerly National Museum of New Zealand, Dominion Museum, and Colonial Museum), NZ; WO, Museum of Caves, Waitomo Caves, NZ.

Anatomical nomenclature

The terms for specific bone landmarks follow Baumel & Witmer (1993). The common term *processus* is abbreviated as *proc.* throughout. When listing material, bones are identified as left (L) or right (R) elements. L or R prefixed by 'p' or 'd' indicates 'proximal' and 'distal' part of the element respectively, e.g., pR fem means the proximal part of a right femur.

Measurements

Measurements were made with TESA® dial callipers and rounded to 0.1 mm. TL: greatest length. PW: proximal width in the lateromedial plane. SW: shaft width at mid-length in a lateromedial plane. SD: shaft width in a dorsoventral plane. DW: distal width.

Comparative material

In the south-west Pacific, *Coenocorypha* is the only sedentary genus of snipe (Gallinagininae) - though several species of *Gallinago* and the Asiatic dowitcher *Limnodromus* are transequatorial migrants into the region. I follow the higher taxonomy of Higgins & Davies (1996) with the modification that Gallinagininae is the correct spelling for the subfamily based on *Gallinago* (*Gallinago* is a feminine form of *Gallus*, so the nominative singular ending in '-go' becomes the genitive singular '-gin-' to form the stem for family group names, thus '-gininae'; Steven Gregory pers. comm, 21 October 2001), and note that *Limnodromus* is often included in Gallinagininae, e.g., by Piersma (1996). I follow the nomenclature for *Coenocorypha* taxa advocated by Holdaway *et al.* (2001) and Worthy *et al.* (in press). All material is from modern skeletons unless stated otherwise. Extinct taxa are indicated †.

Coenocorypha a. aucklandica (G. R. Gray, 1845) Auckland Island Snipe: MNZ 562-S, MNZ 18340, MNZ 19780, MNZ 23115a, MNZ 26380a, CM Av5539.

Coenocorypha a. meinertzhagenae Rothschild, 1927, Antipodes Island Snipe: MNZ 15130, MNZ 25660, CM Av5190.

Coenocorypha huegeli (Tristram, 1893), Snares Island Snipe: MNZ 24434, MNZ 24435 (mix of two individuals), MNZ 25166, MNZ 25692, MNZ 26429, CM Av5200.

Coenocorypha pusilla (Buller, 1869), Chatham Island Snipe: MNZ 1406, MNZ 16667/1, MNZ 18329, MNZ 23514, MNZ 23572, MNZ 23694, MNZ 23871a, MNZ 23869a, MNZ 24228, MNZ 24260, MNZ 26388, MNZ 23870a, MNZ 26389, MNZ 26390, MNZ 26457, AIM B2086, CM Av6574.

†*Coenocorypha iredalei* Rothschild, 1921, Stewart Island Snipe: Skeletal - Native Island: MNZ S35438, MNZ S35941; Ruapuke Island: CM Av25331. The following South Island specimens referred to this taxon by Worthy *et al.* (in press) also were examined: Cobden Quarry, Greymouth, MNZ S38743-38754, 558 bones from 38 individuals; Honeycomb Hill Cave System, Oparara, northwest Nelson CM Av36393, MNZ S22661, MNZ S25671, MNZ S25746; and Moonsilver Cave, northwest Nelson MNZ S26799.

†*Coenocorypha barrierensis* Oliver 1955, North Island Snipe: Lake Poukawa MNZ13191, 17628, 21789, 21787, 21788; F1c Cave, Waitomo Caves WO63; St Benedicts Caverns, Waitomo Caves WO78; Cutthroat Cave, Waitomo Caves WO395; Coincidence Cavern, Waitomo Caves WO76.

Gallinago gallinago (Linnaeus, 1758), Common Snipe, MNZ 24315a, Hongkong; MNZ 22158, United States of America.

Limnodromus semipalmatus (Blyth, 1848), Asiatic Dowitcher, MNZ 25662, Hongkong.

Scolopax rusticola (Linnaeus, 1758), Eurasian Woodcock, MNZ 1255, France.

In addition to the above, species were examined in the MNZ from a wide range of other charadriiform genera as follows: *Haematopus*, *Himantopus*, *Glareola*, *Burhinus*, *Charadrius, Thinornis*, *Anarhynchus*, *Pluvialis*, *Vanellus*, *Arenaria*, *Calidris*, *Philomachus*, *Numenius, Limosa*, *Tringa*, *Phalaropus*, *Larus*, and *Sterna*.

Systematic palaeontology

Order Charadriiformes, Family Scolopacidae, Subfamily Gallinagininae, Genus **Coenocorypha** *G. R. Gray*

The fossils of the new taxon described herein are typically charadriiform and referred to the Scolopacidae as they have the following combination of characters: humerus with a straight shaft rather than appearing sigmoid in anterior view or 'C-shaped' in caudal view; the caudal surface of the *crista deltopectoralis* is convex, not concave; and the *incisura capitis* is interupted by a low transverse ridge, as noted by Zusi & Jehl (1970). In addition, the humerus has a well developed dorsal *fossa pneumotricipitalis* that is about half the diameter of the non-pneumatic ventral *fossa pneumotricipitalis*; the *margo caudalis* (capital shaft ridge) is weakly developed, rather than strongly compressed dorso-ventrally and markedly raised above the caudal surface; the caudal surface between the *tuberculum dorsale* and the *margo caudalis* is flat, not deeply grooved; the *impressio coracobrachialis* is very weakly developed; the *crista deltopectoralis* is recurved ventrally over the *facies bicipitalis*; and it has well-developed *proc. supracondylaris dorsalis*.

They are referred to *Coenocorypha* by the following combination of characters: premaxilla is elongate with the rostrum (where the premaxilla overlies the fused *os nasales*) inflated slightly laterally and markedly ventrally distally of well-developed impressions of the nasal choanae on the ventral surface. On the humerus, the distance between the tip of the *proc. supracondylaris dorsalis* and the distal extreme of the *condylus dorsalis* is less than the width across the *condylus ventralis* and *condylus dorsalis*; the area between the *condylus dorsalis* and the *proc. supracondylaris dorsalis* is concave as the latter process is oriented somewhat cranially rather than dorsally; the ridge bordering the *fossa m. brachialis* ventrally is narrow and concave above the *tuberculum supracondylare ventrale*; the ventral facies proximad to the *epicondylus ventralis* lacks a deep elongate fossa so that the ridge proximal to the *tuberculum supracondylare ventrale* is convex ventrally opposite the *fossa m.*

brachialis. The *crista deltopectoralis* is more strongly recurved ventrally over *facies bicipitalis* than in other genera and the *tuberculum dorsale* is not prominent.

Coenocorypha miratropica sp. nov.

Holotype

A complete left humerus, part of MNZ S38711. Vatuma Cave, *c.* 12 km south of Nadi, Vitilevu, Fiji; 17° 52' 57"S 177° 28' 29"E; T. H. Worthy, G. Udy, S. Matararaba, 18 November 1999. Geologic age unknown, but probably Holocene.

Diagnosis

A *Coenocorypha* species larger than all congeners (Tables 1, 2) with the *tuberculum supracondylare ventrale* relatively larger and uniquely extending proximal of *condylus dorsalis*.

Description of holotype

The holotype humerus (Fig. 1) is not mineralised and is creamy white in colour. It is complete except for slight erosion to the proximal end of the *condylus dorsalis*.

The *fossa m. brachialis* is more rounded and does not extend as far proximally past the *proc. supracondylaris dorsalis* as it does in the New Zealand *Coenocorypha* taxa. This, together with the relatively larger *tuberculum supracondylare ventrale*, results in a much less elongate *fossa m. brachialis*. The proximal half of the *facies caudalis* of the mid shaft region has a 7 mm long ridge on it ending about 4 mm from the *tuberculum dorsale*. The *tuberculum dorsale* is slightly elevated distally.

Measurements of the holotype (mm)

Length 40.2; proximal width 10.4; mid-shaft width 3.0; mid-shaft depth 2.6; distal width 7.3; height from *proc. supracondylaris dorsalis* to the condylus dorsalis 5.4; width across the *condylus ventralis* and *condylus dorsalis* 5.7.

TABLE 1.
Measurements (mm) for *Coenocorypha miratropica* from MNZ S38711.
Under element, L is left, R is right and 'd' is distal.

Element	Length	Proximal width	Shaft width	Shaft depth	Distal width
Humerus *Holotype*	40.2	10.4	3.0	2.6	7.3
Humerus (dR)					7.5
Humerus (dL)			3.1	2.7	7.6
Humerus (dR)			3.2	2.6	
Ulna (dR)					4.7
Ulna (dR)					4.6
Carpometacarpus (L)	26.8	6.7			
Carpometacarpus (L)	26.3	6.5			
Carpometacarpus (L)	26.0	6.5			

Paratypes

Other elements in MNZ S38711 are designated paratypes as follows: 1dL2dR humeri, 2dR ulnae, 3L carpometacarpi, 1L scapula, 1dR1pR tarsometatarsus, 1 pL radius, 2 caudal sections of premaxillary rostrum. Measurements are given in Table 1. The paratype humeri differ from the holotype only by being slightly larger.

Etymology

The species is named from the adjectival forms *mirabilis* and *tropicus* for the surprising fact that this predominantly high latitude genus should occur on a tropical island.

Comparison with other species

Humerus

All other *Coenocorypha* species are smaller than *C. miratropica* (Table 2). In other *Coenocorypha* taxa the ridge on the proximal half of the *facies caudalis* is weak or absent and the *tuberculum dorsale* is not elevated. These two differences may relate to the increased size of the Fijian bird.

Other close relatives of *Coenocorypha* differ as follows. The humerus of *Limnodromus* has the *tuberculum dorsale* distinctly elevated; the *margo caudalis* is strongly compressed; the *crista deltopectoralis* does not recurve over the *facies bicipitalis*; the *impressio coracobrachialis*, while small, is distinct; the distance between the tip of the *proc. supracondylaris dorsalis* and the distal extreme of the *condylus dorsalis* is markedly more than the width across the *condylus dorsalis* and the *condylus ventralis* (as in *Gallinago*); and the *facies ventralis*, above the *epicondylus ventralis*, has a deep elongate fossa undercutting the ridge bounding the *fossa m. brachialis* (also as in *Gallinago*).

In addition to the features noted above, the humerus of *Gallinago* differs further from that of *Coenocorypha* in that

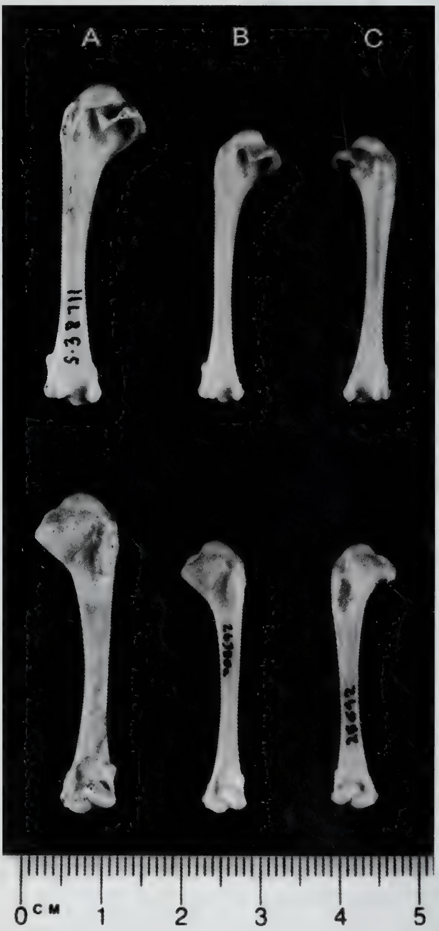

Figure 1. Humeri of *Coenocorypha* in caudal (upper) and cranial (lower) views. A, left humerus *Coenocorypha miratropica* MNZ S38711; B, left humerus *C. a. aucklandica* MNZ 26380a; C, right humerus *C. huegeli* MNZ 25692.

TABLE 2.

Measurements for New Zealand *Coenocorypha* taxa, both modern and extinct from Worthy *et al.* (in press). L length, P proximal width, S shaft width, D distal width. Data are mean ± 1 standard error (range) n. The data for '*Coenocorypha iredalei* Cobden fossil site' are for the largest sample available from a single locality. With negligible temporal variation and no geographic variation, this sample provides the best indication of population variation in this genus. The data for fossil '*C. iredalei* (other fossils)' are from all fossil sites in the South Island other than Cobden. The data for '*C. barrierensis* fossil' are for fossil bones from various sites in North Island.

Species	Hum L	Hum P	Hum S	Hum D
Coenocorypha a. aucklandica	34.4±0.26 (33.6-35.4) 6	8.2±0.13 (7.8-8.6) 6	2.3±0.04 (2.1-2.4) 6	5.8±0.05 (5.5-6.2) 6
Coenocorypha a. meinertzhagenae	34.0±0.30 (33.7-34.3) 2	7.9±0.10 (7.8-8.0) 2	2.3±0.10 (2.2-2.4) 2	5.8±0.05 (5.7-5.8) 2
Coenocorypha huegeli	34.2±0.24 (33.4-35.2) 6	8.3±0.11 (8.0-8.7) 6	2.4±0.04 (2.2-2.5) 6	6.1±0.04(5.9-6.2) 6
Coenocorypha pusilla	31.56±0.168 (30.6-32.6) 13	7.58±0.035 (7.4-7.8) 11	2.43±0.024 (2.3-2.6) 13	5.46±0.043 (5.1-5.7) 12
Coenocorypha iredalei Cobden fossil site	34.85±0.168 (32.9-36.7) 30	8.33±0.055 (7.8-8.9) 27	2.46±0.018 (2.3-2.7) 30	5.84±0.038 (5.5-6.6) 30
Coenocorypha iredalei (other fossils)	34.94±0.198 (32.9-37.3) 42	8.32±0.057 (7.5-8.9) 34	2.48±0.021 (2.2-2.7) 42	5.9±0.04 (5.2-6.3) 34
Coenocorypha barrierensis fossil	33.70±0.242 (32.4-35.7) 19	8.05±0.094 (7.4-8.8) 17	2.38±0.03 (2.0-2.6) 24	5.71±0.057 (5.2-6.1) 19

the *proc. supracondylaris dorsalis* is more dorsally oriented so that the area between it and the *condylus dorsalis* is flat (vs concave).

Ulna and Radius

The two paratypic distal ulnae and one proximal radius are unremarkable in form.

Carpometacarpus

The three fossil paratype left carpometacarpi are typical of *Coenocorypha* with a proximally directed *proc. extensorius*, a robust *proc. pisiformis*, and the ventral side of the *os metacarpale minus* joins proximally to the *os metacarpale alulare* as a ridge that extends to the base of the *proc. pisiformis*. In contrast, *Gallinago* has a relatively larger and more proximally directed *proc. extensorius* and a much reduced *proc. pisiformis* and the ridge leading from the *os metacarpale minus* extends proximally to a point midway between the *proc. pisiformis* and the internal rim of the *trochlea carpalis*.

Scapula

The paratype proximal left scapula is an enlarged version of that of other *Coenocorypha* with a width of 5.8 mm across the articular end.

Tarsometatarsus

The hypotarsal region of the paratype proximal tarsometatarsus is eroded so the canal structure is not comparable to modern specimens. The shaft is robust, unlike the elongate slender tarsometatarsus of *Gallinago* or *Limnodromus*, and has lateral and medial ridges on its posterior facies. The lateral ridge becomes less pronounced distally prior to the break and, judging by the equivalent structure in other *Coenocorypha* species, about half of the bone is missing, indicating a reconstructed total length of *c*. 36 mm. The *tuberositas m. tibialis cranialis* is a paired structure in snipe with the medial one largest. In the fossil, neither is prominent and both are in the base of the deep flat-floored *sulcus extensorius* as in other *Coenocorypha* species, but unlike *Gallinago* where the medial one is raised above the floor on the medial bounding ridge of the sulcus. The fossil distal right tarsometatarsus has broken trochleae, but the plantar surface of the base of *trochlea metatarsi IV* (TIV) is nearly on the same plane as that of TIII, as in other *Coenocorypha*, but unlike *Gallinago*, where the planes of these trochlear surfaces meet at a distinct angle. The *foramen vasculare distale* is large and opens distally on to a flat plantar surface between TIV and TIII. The distance between TII and TIV is wider than the basal width of TIII, unlike the compressed state in *Gallinago* where it is narrower.

Skull elements

Two fragments of the mid- to posterior end of the rostrum complete the paratype series (Fig. 2). This compound bone is formed from the distally-expanded fused *os nasales* overlain by the nasal bar of the premaxilla as shown by the juvenile *Coenocorypha aucklandica* MNZ 18340. One fossil fragment preserves the most proximal section including the length of the impressions for the nasal choanae, which are *c*. 12 mm long and have a convex dorsal margin. The other fragment preserves the distal half of the impressions for the nasal choanae and the entire length of the swollen mid-section comprised of the inflated distal ends of the fused nasals and the overlying premaxilla. The inflated section is *c*. 21 mm long, 2.8 mm wide and 3.4 mm deep at maximum. It has ventro-lateral ridges that converge in a steep angle to a point, distal of the impressions for the nasal choanae, as in all *Coenocorypha* sp. If the proportions are the same as in *Coenocorypha huegeli* MNZ 25692, then

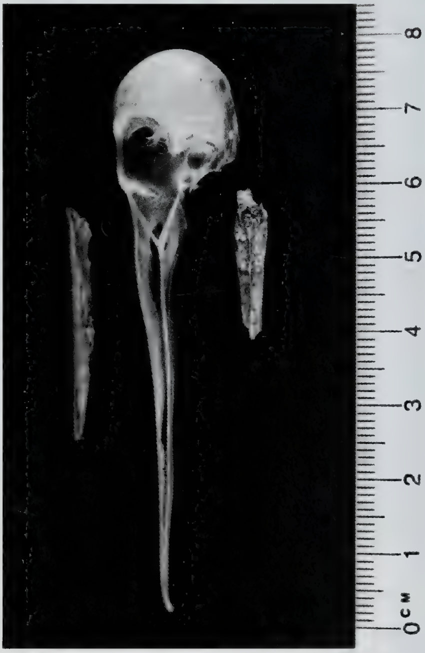

Figure 2. The skull of *C. huegeli* MNZ 25692 compared to rostral fragments MNZ S38711 referred to *Coenocorypha miratropica*, showing the impressions for the nasal choanae.

the combined length of the impressions for the nasal choanae to the end of the inflated section is 46% of total length, which would give a predicted total length of the premaxilla of 71 mm for the Fijian snipe.

Among charadriiforms, only *Coenocorypha*, *Scolopax*, *Limosa*, and *Limnodromus* have an elongate rostrum that has marked ventral swelling distally of the impressions for the nasal choanae. *Scolopax* has a similar expansion of the distal parts of the *os nasales* and the impressions for the nasal choanae are similarly convex on their dorsal margin to *Coenocorypha*. However, it differs in that the ventrolateral ridges bounding the swollen *os nasales* converge towards the cranium at a much narrower angle to meet as a sharp crest (*septum nasale*), at a point midway along the impressions for the nasal choanae. *Limnodromus* differs markedly as the dorsal margins of the impressions for the nasal choanae are concave (convex in *Coenocorypha*) and slope down anteriorly, and the swollen *os nasales* lack ventrolateral ridges that converge cranially. In *Limosa*, on the ventral surface of the swollen *os nasales*, lateral ridges bound a deep central groove, whereas in *Coenocorypha*, the ventral surface carries a prominent medial ridge. *Gallinago*, which is generally considered closely related to *Coenocorypha*, lacks markedly inflated distal *os nasales* in the rostrum, although this region has a central keel as in *Coenocorypha*. In *Gallinago*, the length of the dorsal surface of the premaxilla over the distal end of the impressions for the nasal choanae is concave. Also, in *Gallinago*, the impressions for the nasal choanae are separated by a deep ossified *septum nasale* whose ventral margin is continuous with, and on the same horizontal plane as, the ventral ridge in the mid-section of the rostrum. In contrast, in *Coenocorypha*, the *septum nasale* is poorly developed and does not extend as far ventrally as the swollen base of the *os nasales* immediately distal of it.

Discussion

There are only two sedentary genera of scolopacids in the Pacific region: *Coenocorypha*, with a radiation centred on the New Zealand region and *Prosobonia*, from the central eastern Pacific. The Tuamotu Sandpiper *P. cancellata* and the historically extinct *P. leucoptera* of the Society Islands are shown to have a closer relationship to the Tringini than other scolopacids (Zusi & Jehl 1970), and with a very short bill and long slender tarsometatarsi are very different to *Coenocorypha*.

The species of snipe in the New Zealand region have often been listed in just two species (Auckland Island Snipe *Coenocorypha aucklandica*, Chatham Island Snipe *C. pusilla*) in addition to the extinct Forbes Snipe *C. chathamica* Forbes, 1893, also from the Chatham Islands, e.g. Turbott (1990). However, recent reassessments of the taxonomic status of the several insular populations by first Higgins & Davies (1996), and then Holdaway *et al.* (2001), and Worthy *et al.* (2002), show that most insular forms recognised by Turbott (1990) as subspecies, warrant specific status. Most recently, Worthy *et al.* (2002) have reassessed the taxonomic status of the fossil forms known from the North and South islands of New Zealand, concluding that they are distinct from each other and referrable to *Coenocorypha barrierensis* and *C. iredalei* respectively. Therefore, in addition to these two species, New Zealand has *C. huegeli* from the Snares Island, *C. aucklandica* from both the Auckland Islands and Antipodes Island (with subspecific distinction), *C. pusilla*, extant in the Chatham group, and *C. chathamensis*, extinct from the Chatham group. A recently discovered population from an islet off Campbell Island is undescribed but similar to *C. aucklandica* (Colin Miskelly, pers. comm.).

The extinct *C. chathamica* was described on the basis of skulls and there is no description of its post-cranial elements. Its humeri are, however, no bigger than those of *C. aucklandica* (Table 2), and their size range may overlap that of *C. pusilla* (A. Tennyson, pers. comm.), so pending a morphological study of Chatham Island fossil snipe bones, reliable data in the form of summary statistics are not yet available (Worthy *et al.* 2002).

Outside of the New Zealand region a *Coenocorypha* species has been reported from Norfolk Island (Meredith 1985, 1991). Norfolk Island lies on the same continental fragment as New Zealand and has more avifaunal similarities with New Zealand than to Australia (Holdaway *et al.* 2001). The figured specimens (Meredith 1991: Plate 2B) are of similar size to *C. aucklandica* from the Auckland Islands, and were referred to that taxon by Meredith (1991). However, as most New Zealand snipe taxa have similar sized humeri and tibiotarsi, yet differ in other ways such as element proportions, plumage, and behaviour, this specific attribution may not be correct.

Balouet & Olson (1989) reported a *Coenocorypha* sp. from New Caledonia on the basis of partial right and left humeri and a partial coracoid and commented that they represented a species much larger than the New Zealand species.

The Fijian *Coenocorypha* has not been compared to the New Caledonian material but, apart from size, the fragmented nature of the humeri from New Caledonia and the lack of a coracoid from Fiji forbid comparison. The Fijian bird is clearly markedly larger than all the New Zealand species and larger than the Norfolk Island bird. All previous records of *Coenocorypha* occur on islands associated with the continental fragment on which New Zealand lies. The presence of this essentially New Zealand genus in Fiji on Vitilevu adds a new, southern, biogeographic element to that fauna. Its extant birds are mostly related to birds farther east in Tonga and Samoa (Watling 1982) and some of the extinct birds and the herpetofauna have relationships to the west and particularly to the Solomons (Worthy 2000, 2001a, b, Worthy *et al.* 1999).

The description of *Coenocorypha miratropica* raises the total of described extinct birds to seven, with two additional recognised, but undescribed, species from Vitilevu. A minimum of 56 land bird species were therefore formerly indigenous to Vitilevu (78 for the Fijian archipelago). Thus at least 20% of the Vitilevu avifauna, including at least six genera and all the more aberrant forms, are now known to have become extinct in the late Holocene.

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Reassignment of *Chordeiles vielliardi* Lencioni-Neto, 1994, to *Nyctiprogne* Bonaparte, 1857, with comments on the latter genus and some presumably related chordeilines (Caprimulgidae)

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Chordeiles vielliardi was described from two specimens: an adult male and a juvenile male taken near Manga, Bahia (10°23'S, 42°30'W), in the valley of the Rio São Francisco, north-eastern Brazil (Lencioni-Neto 1994). Lencioni-Neto diagnosed it as a 'Caprimulgidae of small size, without white markings on the wing, tail, or throat.' He allocated it to the genus *Chordeiles* and concluded that 'the most closely related species is the sympatric *Chordeiles pusillus*' because of its 'relatively small bill and lack of prominent rictal bristles... proportions near those of *Chordeiles pusillus*... and approaching that species in its pattern, habitat, and behaviour' (translation from description in French). The new species was not tape-recorded and the only vocalization heard, a 'bit-bit' delivered during the day when the birds were flushed from day-roosts, was described as similar to a vocalization of Least Nighthawk *Chordeiles pusillus*.

During the course of field work in November 1994, in the valley of the Rio São Francisco near Januária in northern Minas Gerais (15°31'S, 44°23'W) *c.* 600 km south of Manga, Bahia, the first four authors heard and observed several small nightjars similar to Band-tailed Nighthawk *Nyctiprogne leucopyga*, a species unknown from Minas Gerais or from the valley of the Rio São Francisco. We captured, photographed, measured, then released one individual, and tape-recorded others. These birds lacked the white median tail-band and white lateral throat patches (the latter being buffy and poorly defined) that mark all known populations of *N. leucopyga*.

We subsequently examined an unidentified caprimulgid specimen deposited in the Laboratory of Ornithology, Universidade Federal do Rio de Janeiro (UFRJ) recovered in April 1994, near Mocambinho, Minas Gerais, by Larissa Cunha, which proved to be the *Nyctiprogne* nighthawk we had observed in that region. Comparison of this specimen with the holotype of *Chordeiles vielliardi* leaves no doubt that the Minas Gerais population is referable to that form. In this paper we re-evaluate the relationships of *Chordeiles vielliardi* based primarily on information lacking in the type description, and discuss generic diagnosis of *Nyctiprogne* relative to other genera in the subfamily Chordeilinae of the Caprimulgidae.

Generic and species status of *Chordeiles vielliardi*

Plumage

We directly compared the holotype of *Chordeiles vielliardi* held at the Museu de Zoologia da Universidade de São Paulo (MZUSP; the paratype had not been deposited in a public institution) with the specimen from near Mocambinho, Minas Gerais (mentioned above) and 22 specimens of *Nyctiprogne leucopyga* held at the MZUSP. This series of *N. leucopyga* includes 15 (six males, eight females and one sex unknown) from the lower Rio Tapajós; four (two males [one a juvenile] and two females) from Conçeição do Araguaia, Pará; two females from Jamundá (Paraná Bom Jardim), Pará (all of the above are presumably nominate *leucopyga*), and the holotype (male) of *N. l. majuscula* (Pinto & Camargo 1952). Though Lencioni-Neto (1994) stated that he compared his specimens of the new species with 'material available at MZUSP and at the Paris au Muséum national d'Histoire naturelle (MNHN)', he provided no data based on these comparisons, and did not list the specimens examined. The comparative measurements provided in his Table II were taken from Ruschi (1979), and most appear to be grossly erroneous.

Nyctiprogne leucopyga has a conspicuous white median band on the three outer rectrices, lacks white in the primaries, and has white on the throat restricted to a small, rounded patch on either side (*contra* the illustration in Meyer de Schauensee & Phelps 1978 reproduced in Hilty & Brown 1986, although the text is accurate in both works). *Chordeiles vielliardi* is almost identical to *N. leucopyga*, differing primarily in lacking the median tail-band. *Chordeiles pusillus* differs dramatically. It is illustrated, and described accurately and concisely, in Hilty & Brown (1986).

Vocalizations

Fig. 1 permits comparison of the songs of (A) *Chordeiles vielliardi* (B) *Nyctiprogne l. leucopyga* (C) *N. l. majuscula* and (D) *Chordeiles p. pusillus*. The songs of *C. vielliardi* and *N. leucopyga* (both the nominate and the geographically closest named population) are strikingly similar in pattern and tonal quality. Each comprises three elements, with the first separated from the other two by a long (*c*. 1.5–2.0 s) pause. The first note is occasionally given repeatedly before the two-element phrase.

Frequency of repetition of the two-element phrase is intra-individually variable, but the two elements are invariably given together. The song and calls of nominate *C. pusillus* bear no resemblance. Recordings of all these taxa may be heard on the compact disc produced by the National Sound Archive of the British Library (Ranft & Cleere 1998).

Habitat and behaviour

Chordeiles vielliardi is most common along the Rio São Francisco where the river is bordered by gallery woodland and brushy growth of this woodland, and is apparently uncommon or absent where this habitat has been removed or highly altered

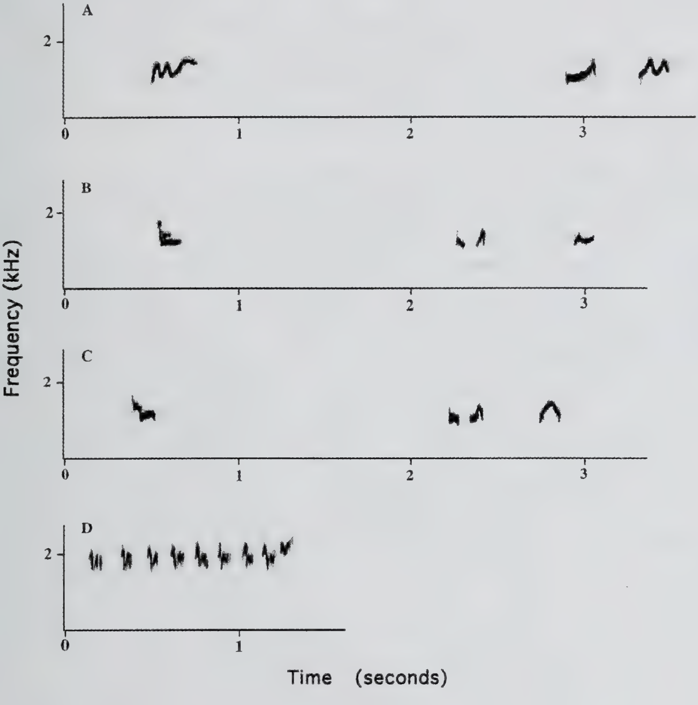

Figure 1. General spectrographic comparison of the songs of (A) *Chordeiles vielliardi* from Januária, Minas Gerais; (B) *Nyctiprogne leucopyga* from Santarém, Pará, Brazil (presumably nominate *leucopyga*); (C) *N. leucopyga* from Poconé, Mato Grosso (presumably *majuscula*); and (D) *Chordeiles pusillus* from Petrolina, Pernambuco (presumably nominate *pusillus*). Note close similarity of flat-frequency, three-element, structure of *Nyctiprogne* taxa in A-C relative to much shorter, rising, multiple-note series of *Chordeiles p. pusillus* (D). Note divergence in note structure between A and B/C, monosyllabic structure of second note of A, and longer interval between first and second notes of A. The degree of intra- and inter-individual variation in these vocalizations needs further study. Samples of each were: *C. vielliardi* (4); *N. l. leucopyga* (8; from the lower rios Tapajós and Xingú); *N. l. majuscula* (3 from Mato Grosso, Brazil including 1 by Jacques Vielliard [Hardy *et al.* 1980 and updates, Ranft & Cleere 1998] and 4 from northeastern Bolivia by Sjoerd Mayer); and *C. p. pusillus* (5 from Pernambuco and Bahia). All recordings except five of the *N. l. majuscula* by BMW.

and semi-arid *caatinga* scrub now dominates the river edge. Loose colonies of up to 30+ birds were found roosting for the day in dense, often brushy vegetation. The birds perched 'crossways' (perpendicular to the substrate) from *c*. 0.2 to 1.5 m above ground, never on the ground (*contra* Lencioni-Neto 1994), sometimes with two to four individuals huddled side-by-side on a thin, horizontal limb. When flushed during the day, individuals flew a short distance to land on another low, horizontal perch, often uttering a short single or double note, which is apparently the vocalization mentioned by Lencioni-Neto (1994).

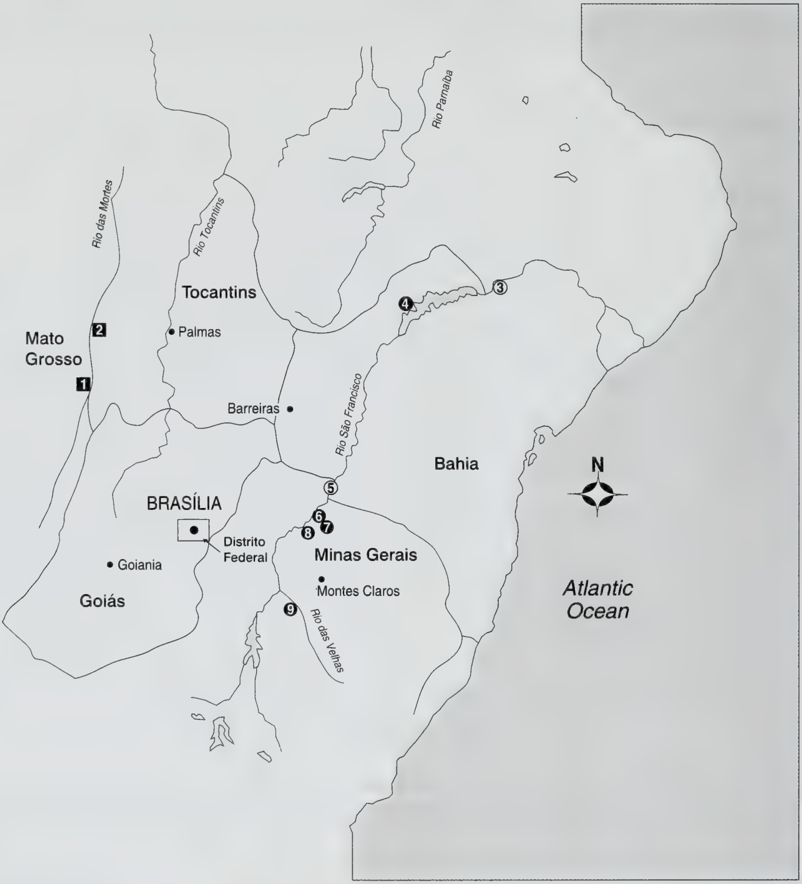
Rio das Mortes
Rio Tocantins
Rio Parnaiba
Tocantins
Palmas
Mato Grosso
1
2
3
4
Barreiras
Rio São Francisco
Bahia
N
5
BRASÍLIA
6
7
8
Distrito Federal
Minas Gerais
Goiania
Goiás
Montes Claros
9
Rio das Velhas
Atlantic Ocean

Figure 2. Localities mentioned in the text. 1. The type locality of *Nyctiprogne leucopyga majuscula* (Pinto & Camargo 1952), Dumbá, on the Rio das Mortes, Mato Grosso (14°27'S, 51°01'W). 2. The closest known locality for *N. l. majuscula* to the range of *Nyctiprogne vielliardi* in the valley of the Rio São Francisco, Parque Estadual Ilha do Bananal, Tocantins (09°50–10°50'S, 49°56–50°37'W). 3. Curaçá, Bahia. 4. The type locality of *N. vielliardi* (Lencioni-Neto 1994), near Manga, Bahia. 5. Carinhanha, Bahia. 6–7. Localities close to the village of Mocambinho, Minas Gerais. 8. Januária, Minas Gerais. 9. The Rio das Velhas, near its confluence with the São Francisco, close to Pirapora, Minas Gerais.

Especially on clear days, the birds began to vocalize around sunset, singing from concealed day-roost perches for a short time, usually less than *c.*15 minutes. There was another active song period around dawn. We have never observed *C. vielliardi* singing in flight, but individuals frequently gave various calls (mostly single notes) on the wing, sometimes in an irregular series, mostly soon after leaving or as they were returning to the day roost, and during intraspecific interactions.

Foraging commenced well before dark and was entirely aerial. We witnessed impressive concentrations of foraging birds on several occasions. For example, on 20 December 1999, from a vantage point near Mocambinho, 150-200 individuals were seen along *c.* 300 m of shoreline, foraging over the São Francisco. Individuals flew rather slowly and low, from 1 to *c.* 10 m over the water. Flight characteristics were distinctive, with shallow, fluttery wingbeats interspersed with occasional slightly deeper strokes, and much short-distance gliding with the wings held in a dihedral position. They frequently banked abruptly to roughly retrace their route as they pursued tiny arthropod prey. Foraging groups had dispersed by the time it had become completely dark.

We did not observe any courtship behaviour. On 9 November 1998, GMK located a nesting *C. vielliardi* at Mocambinho, in a sandpit *c.* 2 m wide, 15 m in length, and 2.5 m deep. The nest-site was in the depression of a human footprint close to one edge of the pit and 1 m from a small plant. It held two pinkish eggs. On close approach, the incubating bird flushed to a low perch (30–50 cm high) in nearby *caatinga* scrub.

The above description of *C. vielliardi* accords almost exactly with our field observations of *Nyctiprogne leucopyga.* That species inhabits *várzea* and *igapó* edge and, to a lesser extent, thick brush on dry ground, always in the immediate vicinity of water. It is concentrated almost entirely in 'blackwater' regions, and is thus rare or absent over much of the western Amazon basin. It also occurs locally in the seasonally flooded portions of the Venezuelan *llanos* and the central Brazilian *pantanal*. Day roosts are loosely communal in low, dense vegetation, often with abundant, tangled vines. Cherrie's (1916) fine description of roost sites and behaviour closely matches our own experience:

"During the day these birds conceal themselves in the dense thickets bordering ponds and streams, where they may be found perched on horizontal branches from 30 to 100 cm from the ground. They perch crossways of [i.e., perpendicular to] the branch, and not infrequently I have seen from two to eight or ten huddled close beside one another all facing the same direction."

We have noted *N. leucopyga* perched as high as *c.* 2 m above ground, but never on the ground. The nest-site is situated in a shallow, leaf-lined depression on sandy ground (BMW pers. obs.). Synchronized flight performed by two birds involves turning manoeuvres and short glides in which participants remain within *c.* 0.5 m of each other as one or both emit low, churring sounds. This appears to be an element of courtship.

Chordeiles pusillus differs from *Chordeiles vielliardi* and *Nyctiprogne leucopyga* in several respects. It inhabits seasonally dry, even arid open country, such as savannas, *campinas*, and *caatinga* brush, often far from water. *Chordeiles pusillus* roosts directly on open ground, usually among camouflaging pebbles and rocks, often several metres from brushy cover. Individuals begin to forage up to 20–30 minutes prior to sunset, attaining heights of 10–50+ m above ground within minutes of leaving the roost. The birds fly with several relatively deep, smooth wing beats followed by a glide, with frequent slight changes in direction, seldom banking sharply or retracing part of the foraging route (unless over an isolated water source, such as a pond or cattle tank). Like its congeners, *Chordeiles pusillus* sings from perches (i.e., the ground) and in flight. While singing on the wing, it sometimes performs a high, shallow-swooping display flight.

Taxonomic conclusions and diagnosis of the genus *Nyctiprogne*

Close parallels in voice, plumage, habitat, and behaviour unequivocally demonstrate that *Chordeiles vielliardi* is a member of the *Nyctiprogne leucopyga* complex, and indicate no particular affinity to *Chordeiles pusillus* or any other member of that genus. Therefore, we propose reassignment of *vielliardi* from *Chordeiles* to *Nyctiprogne*. Within the *Nyctiprogne leucopyga* complex, distinctions in both plumage and vocalizations suggest species status for *Nyctiprogne vielliardi*. Though there appears to be a general reduction in the amount of white in the plumage of *Nyctiprogne* relative to other chordeilines (none in the wing and little in the throat), we view the lack of white in the tail of *vielliardi* as a significant, derived character. We suspect that the rather obvious differences in the sonograms of songs of *N. vielliardi* and *N. leucopyga* (e.g., structure of individual notes and inter-note intervals; Fig. 1A compared to 1B and C) reflect real character divergence. However, documenting the degree of both intra- and (especially) inter-individual variation would ideally involve a larger sample of recordings of better quality.

Since the description of *Nyctiprogne* Bonaparte, 1857, its integrity has not been challenged; in fact, it was clearly supported by Oberholser (1914) and Ridgway (1914). However, considering only Bonaparte's (1857) limited description ("very small bill with somewhat concealed nostrils" *fide* Friedman 1945), one could make a case for merging *Nyctiprogne* with *Chordeiles*. We maintain *Nyctiprogne* based on several distinctions which, in combination, set it apart from other groups within the Chordeilinae. These include small size; lack of sexual dichromatism; lack of white in the wing (which *Lurocalis* also lacks), greatly reduced white in the throat; possession of a conspicuous median tail-band (except for *vielliardi*); habit of singing only from a perch, never in flight; habit of roosting side-by-side (not individually isolated, as do all other chordeilines, notwithstanding grouping of some species); habit of perching 'crossways' on (perpendicular to) thin, low branches (as opposed to parallel orientation on somewhat broader, higher limbs as some *Chordeiles* do and *Lurocalis* always does), never on the ground (as *Chordeiles* and *Podager* frequently do); and distinctively slow, fluttery flight. Some of the flight and perching peculiarities may eventually be linked to modifications of skeletal structure or musculature, which have not been studied. Other distinctions separating *Lurocalis* are its proportionately short tail and nesting in trees (Straneck *et al.* 1987, Simon & Bustamante 1999).

Nyctiprogne's peculiarities of singing only from a perch and of perching crossways on branches are shared by most of the lowland Neotropical members of Caprimulginae. Differences between *Nyctiprogne* and most Neotropical members of Caprimulginae include *Nyctiprogne*'s reduced rictal bristles, habit of roosting by day above ground (most Neotropical caprimulgines roost on the ground or other terrestrial substrates such as rock walls and cliffs), roosting side-by-side, and foraging exclusively in flight (typical of most chordeilines but not of caprimulgines, all species of which regularly perform aerial sallies from the ground or slightly elevated perches, although some species also make multiple prey attacks during extended, rapid, linear flights). We mention all of this in consideration of the question: Could *Nyctiprogne* be more closely related to some nightjars of the Caprimulginae than to the nighthawks of the Chordeilinae? The two subfamilies differ in several characteristics of cranial morphology (Oberholser 1914); these should be verified for *Nyctiprogne*, which apparently has not been examined in this respect. It seems conceivable that roosting above ground and foraging exclusively in flight by *Nyctiprogne* could be obligatory adaptations to evolution in flooded habitats. In our opinion, systematic placement of *Nyctiprogne* awaits a well-corroborated phylogeny of the Caprimulgidae, or at least one for the Neotropical members of that family. Regardless of its relationship to other members of the family, the genus *Nyctiprogne* is a well-defined evolutionary lineage of widespread distribution and one that has undergone more diversification at the species level than heretofore recognized.

Biogeography and present status

As mentioned above, *Nyctiprogne vielliardi* was known from a single locality in northwest Bahia. Thus far, all of our observations have been considerably farther south in the Rio São Francisco valley of northern Minas Gerais, where we have found it to be common around Mocambinho (initially documented by Larissa Cunha), near Januária, and near Pirapora where the Rio das Velhas joins the São Francisco (although GMK found no *N. vielliardi* at a spot along the São Francisco just SW of Pirapora in mid-Febraury 2002). However, just a short distance downriver at Carinhanha, Bahia, in November 1998, GMK surveyed at both dawn and dusk for *N. vielliardi* but none was found. Much farther downstream on the margins of the São Francisco at Curaçá, Bahia, during February-March 1997 and again in January 2000, JMB searched unsuccessfully for *N. vielliardi* on several occasions.

The type locality, Manga, Bahia, lies between Carinhanha and Curaçá, on the west (left) bank of the São Francisco near the margin of the Sobradinho reservoir. The creation of this huge reservoir in the 1970s destroyed all semideciduous and gallery woodland along that stretch of the river, which encompassed a large percentage of the probable range of *N. vielliardi*. The two Manga specimens were collected in 1987, several years after the São Francisco was dammed. Whether *N. vielliardi* is still present along the margins of the reservoir should be confirmed, but it appears to be absent a short distance downriver, near Curaçá. How much farther below Manga, Bahia on the São Francisco *N. vielliardi* occurs (or upstream on the Rio das Velhas or other tributaries of the São Francisco) remains to be determined; vast stretches of the river have not been surveyed.

The localities closest to the Rio São Francisco of Bahia and Minas Gerais from which *Nyctiprogne leucopyga* is known are Nazaria, Piauí (*c*. 580 km north in the valley of the Rio Parnaiba) and Dumbá, Mato Grosso (*c*. 1,200 km west in the valley of the Rio das Mortes), the type locality for the subspecies *majuscula*. The known distribution of *Nyctiprogne vielliardi* and the closest known localities for *N. leucopyga* are shown in Fig. 2.

Several avian taxa range from the middle Rio São Francisco to the valley of the Rio Parnaíba in western Piauí, with some also extending west to eastern Goiás. All are considered to be subspecies of more widespread Amazonian/Orinocan species (examples include Rusty-backed Spinetail *Cranioleuca vulpina reiseri*, Greyish Saltator *Saltator coerulescens superciliaris* and Orange-fronted Yellow-Finch *Sicalis columbiana leopoldinae*). Hellmayr (1929) described a specimen of *Nyctiprogne leucopyga* from the Rio Parnaíba collected by Reiser as 'identical with others from Amazonia, French Guiana, and Venezuela', obviously indicating the specimen has a white median tail-band. *Nyctiprogne vielliardi*, then, represents an example of divergence within the São Francisco–Parnaíba region. A small number of taxa are further restricted to the region from the Rio São Francisco west to eastern Goiás (only 2–3 forms have been regarded as species). Willis & Oniki (1991) restricted endemic species of birds here to 'upland *campina–vellozia* scrub zones and the deciduous forest', further specifying that 'no endemic species comes from nearby lowland habitats...'. However, Spix's Macaw *Cyanopsitta spixii* appears to be a 'lowland' endemic of the middle São Francisco in riverine woodlands (C. Yamashita pers. comm., Collar *et al.* 1992), and we suggest that *Nyctiprogne vielliardi* is another. It was included in an "Endemic Bird Area" called "North-east Brazilian caatinga" (EBA 070; Stattersfield *et al.* 1998), which encompasses the type locality and a much larger region of interior north-eastern Brazil. It is now clear, however, that *N. vielliardi* would be included more appropriately in their EBA 074, which centres on wooded habitats along the middle São Francisco River valley. We suggest that the current status of *Nyctiprogne vielliardi* be defined as "Vulnerable", because it is not protected by any conservation area, and it is likely to suffer significant reduction in numbers if the present alarming rate of destruction of riverine habitat in its limited range continues.

Closing remarks

Although identification of skin specimens of caprimulgids at the genus and species levels is straightforward given comparison with museum series, in the case of *Nyctiprogne vielliardi*, superficial similarity to another species in another genus led to an erroneous description. This would probably not have happened if vocalizations had been studied. There is a similar precedent for generic misallocation being discovered through attention to vocalizations in the Neotropical Caprimulgidae: Pierson (1986) demonstrated that the voices of Yucatan Poorwill *Nyctiphrynus yucatanicus* and Yucatan Nightjar *Caprimulgus badius* had been transposed in the literature since their earliest descriptions. When Hardy & Straneck (1989) studied the vocalizations of probable sister taxa of these species in Central and South America, Pierson's (1986) correction of generic placement was confirmed.

In the highly nocturnal and morphologically conservative Caprimulgidae, loud and distinctive vocalizations play a seminal role in communicating species identities and maintaining pair-bonds. The case of "*Chordeiles*" *vielliardi* serves to underscore that no taxon should be described without presentation of sonograms and bio-acoustic diagnosis of a sample of tape-recordings of the novel form and its presumed closest relatives except, perhaps, under the most extreme circumstances (e.g., Safford *et al.* 1995). These must be recordings of homologous vocalizations and they should be from as close to type localities as possible. LeCroy & Vuilleumier (1992) recommended that voice be included in descriptions of all new species of birds, and this has certainly become the standard in recent years. Vocalizing birds should be collected to provide vouchers for the associated recordings and for other specimens, such as skeletal material, tissue, and stomach contents.

Finally, Lencioni-Neto (1994) did not propose an English or Portuguese name for *vielliardi*. Bahian Nighthawk was introduced by Cleere (1998, 1999) and subsequently employed by Ranft & Cleere (1998) and Holyoak (2001). Caatinga Nighthawk was coined by Stattersfield *et al.* (1998). Neither is quite satisfactory, especially in light of our greatly increased knowledge of the distribution and other aspects of the natural history of this bird. We suggest the name Plain-tailed Nighthawk to call attention to *Nyctiprogne vielliardi*'s most significant, diagnostic plumage character. The Portuguese name Bacurau-do-São-Francisco serves to highlight the restricted range of *N. vielliardi* and to draw attention to this region's remarkable and highly threatened avifauna.

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Morphological and behavioural evidence of relationships of the Cuckoo Finch *Anomalospiza imberbis*

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Viduids are African finches that are obligate brood parasites, using other species to incubate their eggs and care for their young (Payne 1996, 1997a, b, 1998). Of 20 viduid species, 19 are indigobirds and whydahs in the genus *Vidua*, and one is the Cuckoo Finch *Anomalospiza imberbis*. Recent analysis of mtDNA sequence data supports the idea that *Anomalospiza* and *Vidua* are each others' closest relatives and their common ancestor was a brood parasite (Sorenson & Payne 2001). The molecular genetic distance between the two genera indicates that brood parasitism originated in these finches *c*. 17-20 million years ago. Moreover, the parasitic finches (Viduidae) are most closely related to the grassfinches (Estrildidae) in a sister relationship, and are not closely related to the weaverfinches (Ploceidae) (Sorenson & Payne 2001).

Anomalospiza are yellowish in plumage (adult males in breeding season; they are more dull in the non-breeding season) or sparrowy-brown (females and juveniles), stocky, thick-billed birds. They superficially resemble in plumage a number of other finches with which they flock in the breeding season. They are brood parasites on *Prinia* and *Cisticola* warblers of open grasslands (Vernon 1964).

The systematic relationship of *Anomalospiza* has a long and contentious history. Although no comprehensive phylogenetic analysis included *Anomalospiza* until Sorenson & Payne (1998, 2001), certain morphological and behavioural features had been used to support its affinity with various families. Here we describe morphological and behavioural features which support the molecular evidence that *Anomalospiza* is a viduid finch.

Taxonomic history

The Cuckoo Finch was originally described as a canary (*Crithagra imberbis*, Carduelinae; Cabanis 1868); Sharpe (1888) included it in another canary genus *Serinus* in the family Fringillidae, and Reichenow (1904) also considered it to be a canary. Other Old World finches were placed in a broadly conceived Ploceidae (Sharpe 1889). Shelley (1901) described the genus *Anomalospiza* based on the deep, compressed bill, straight edge of the culmen, and the uniquely angled shape of the cutting edge of the lower mandible, and recognized the bird as related to the weaverbirds Ploceidae, in his subfamily Viduinae (Shelley 1905). This was based on wing shape, with short outer primary and plumage dimorphism like that of *Euplectes* and *Quelea*, along with *Vidua* (Shelley 1905).

Chapin (1917) provisionally placed *Anomalospiza* in his Estrildinae, which included Shelley's Viduinae, based on the bill shape and tenth primary size, which are similar to Locust Finch *Paludipasser locustella*. Chapin envisioned that a study of *Anomalospiza*'s nest and nestlings would someday resolve the issue. Meanwhile, field research suggested (Roberts 1913), then confirmed (Roberts 1917, van Someren 1918), that *Anomalospiza* is a brood parasite; moreover, further study revealed that it is obligate in that occupation and it builds no nest (Roberts 1939, Friedmann 1960). Delacour (1943) removed *Vidua* and *Anomalospiza* from Estrildinae, but did not keep the two genera together. *Anomalospiza*, he asserted, "is nothing but a Ploceine weaver", a claim that he supported with plumage characteristics; whereas *Vidua* was grouped with *Euplectes*, in so doing combining the whydahs with widow-birds as "widows" ("veuves") (Delacour & Edmond-Blanc 1933-1934). Chapin (1954) guessed that nestling *Anomalospiza* had no mouth spots or papillae and reaffirmed his faith in its status in Ploceinae. Nearly all later systematists recognized *Anomalospiza* as a ploceid rather than an estrildid or viduid, and Friedmann (1960) thought it "is clearly not closely related to the Viduinae". However, Bannerman (1949) placed *Anomalospiza* in Viduinae because its short strong bill and minute tenth primary were unlike typical ploceine weavers.

Williams & Keith (1962), in the light of Chapin's (1954) observation that adult males had incompletely pneumatized skulls, provided more specific data regarding this condition, and noted this as a viduid feature (as in White 1948), although a few other birds such as crossbills *Loxia* and Darwin's finches *Geospiza* also have unpneumatized skulls in the adult. Finally, Benson & Pitman (1964) discovered information which had been awaited for half a century, that *Anomalospiza* nestlings do not have the mouth markings of the *Vidua* parasitic finches. Vernon (1964) claimed the lack of mouth markings and the shape of the nestling bill to be evidence of a ploceid relationship. Nicolai (1964), however, recommended that adaptive characters such as the mouth markings of the young should not be used to infer phylogenetic relationships of the parasitic finches. In the field, Vernon (1964) found that female *Anomalospiza* generally remove all eggs from the host's nest when she lays her own, whereas female *Vidua* occasionally remove a host egg but leave the others in the nest (Morel 1973). Hall & Moreau (1970) doubted the utility of behavioural data in determining the systematic status of *Anomalospiza*, however, since the parasite could have diverged from its closest relative. Morlion (1971, 1980) did not include *Anomalospiza* in her study of the pterylosis of African finches. Bentz (1979) found that *Anomalospiza* had, like other Old World finches, an undiagnostic forelimb myology, and a hindlimb myology like certain ploceids. Biochemical tests of birds in the Ploceidae-Estrildidae assemblage (Sibley 1970, Kakizawa & Watada 1985, Christidis 1987, Sibley & Ahlquist 1990) did not include samples of *Anomalospiza*. Payne (1997a,b) and Sorenson & Payne (2001) recognized Viduidae (whydahs and indigobirds, together with Cuckoo Finch), Estrildidae (waxbills) and Ploceidae (weavers) as separate families, and this nomenclature is used throughout the present work.

Morphology

Specimens of *Anomalospiza* in the University of Michigan Museum of Zoology (UMMZ) were examined, including 15 skins, seven skeletons and four alcohol specimens, and additional alcohol specimens were examined at the American Museum of Natural History (AMNH) in New York and the Natural History Museum (NHM), Tring.

Pterylosis

The families Ploceidae, Viduidae and Estrildidae were distinguished from a more broadly conceived family Ploceidae of Sharpe (1889) on the basis of the length and shape of the outermost (tenth) primary (Shelley 1905, Chapin 1917). Ploceids in the more restricted sense in fact range from having from a large tenth primary (malimbes *Malimbus*) to a nearly nine-primaried wing (social-weavers *Pseudonigrita*). Bannerman (1949) indicated that the minute or vestigial outer primary in *Anomalospiza* was more like that of Viduidae and Estrildidae than of Ploceidae. Chapin (1917) rejected the character as an important basis for systematic inference because "it does not express real relationship" and "there are numerous exceptions"; *Quelea*, for instance, is close to *Vidua* on this basis but not in other characters examined. Sushkin (1927) claimed that the tenth primary was "declining" in these birds and therefore should not be used as a taxonomic criterion. Delacour (1943) and Moreau (1960) denied the usefulness of tail or wing lengths, particularly the tenth primary, in determining family status in the finches.

To compare the feather structure and feather tracts of Old World finches, Morlion (1971, 1980) examined 21 ploceids, four *Vidua* and 15 estrildid finches, but not *Anomalospiza*. We compared skins and alcohol specimens of *Anomalospiza* with Morlion's results for Ploceidae, *Vidua* and Estrildidae, where these characteristics were consistent within a family and were visible in the specimens examined. Several morphological features are similar in *Anomalospiza* and *Vidua*. *Anomalospiza* has a short, narrow outer primary as in *Vidua* and Estrildidae (although this primary is long in the estrildid twinspots *Clytospiza* and *Euschistospiza* and bluebills *Spermophaga*); it is large in most Ploceidae, though it is short in *Euplectes* and *Quelea*. *Anomalospiza* shares with *Vidua* several features of the feather tracts that are unlike ploceids, estrildids or either of these, or that are like estrildids but not ploceids: (1) 2 rows of upper greater secondary coverts, (2) 8 upper median secondary coverts (as also in Estrildidae), (3) 4 upper tertiary coverts (as also in Estrildidae), (4) 9 under greater primary coverts, (5) 1 row of ocular feathers (as also in Estrildidae), (6) 8 longitudinal rows of feathers on the crown, and (7) 3 rictal bristles (as also in Estrildidae). In these seven characters the pterylosis of *Anomalospiza* resembles that of *Vidua* rather than Ploceidae. In the number of under lesser primary coverts, however, *Anomalospiza* has a minute tenth covert; *Vidua* lack a feather in this position, and Ploceidae have a full-sized tenth covert. *Anomalospiza* share no features of the feather tracts with ploceids that differ from *Vidua* and the estrildids.

The many similarities of pterylosis in *Anomalospiza* and *Vidua*, and the differences between these forms and other Old World finches, indicate that the similarities are synapomorphies, shared traits that evolved in the common ancestor of these two genera.

Plumage

Delacour (1943) believed *Anomalospiza* to be a ploceid because males are sparrowy-brown in the nonbreeding season and look like females, and van Someren (1922) thought there were two moults of plumage in a year, but in fact male *Anomalospiza* are yellowish below in all seasons and do not have a sparrowy-brown female-like plumage once they have moulted from the juvenile plumage. Males are streaked greenish and black above in all seasons but are brighter above and brighter yellow below in the breeding season. Friedmann (1960) noted the similarity between female plumage of *Anomalospiza* and that of the ploceid *Euplectes.* Nicolai (1964) noted that the other viduids are similar to the ploceids with respect to a seasonal alternation of male breeding and nonbreeding plumage. *Anomalospiza* and *Vidua* differ in the manner in which the breeding plumage is acquired. In *Vidua,* males moult into their breeding plumage, but in *Anomalospiza* the cryptic tips of the feathers wear off to reveal the brighter yellow breeding plumage (Bannerman 1949). The plumage colour and pattern of *Anomalospiza* lacks obvious synapomorphies that are unique to one of these families of finches.

Cranial skeleton

Viduid finches, unlike most passerine birds, have a peculiar delayed ossification of the dorsal region of the adult skull, in which the frontal region of the skull consists in part of a single, unpneumatized layer of bone, much as in juveniles of other songbirds (Chapin 1917, White 1948). Chapin (1954) described an adult *Anomalospiza* with an incompletely pneumatized skull, and Williams & Keith (1962) found only one of 14 adult *Anomalospiza* with a fully pneumatized skull; in the other specimens, 10 to 30 % of the skull was unpneumatized. In the UMMZ *Anomalospiza*, 13 of 15 adult specimens (including all six laying females with an egg in the oviduct or with recently ovulated follicles) with skull data were incompletely pneumatized. Another bird was captured as an adult and was kept in an aviary, and three years later it had a fully pneumatized skull. In Village Indigobirds *Vidua chalybeata* a few birds taken in the field were fully pneumatized, and in captivity the birds sometimes completed their skull pneumatization within four years (UMMZ, RBP). The incompletely pneumatized skull and its delayed maturation in adult *Anomalospiza* and *Vidua* indicate developmental synapomorphy from a common ancestor.

In *Anomalospiza* the bill is short and stout; the jaw is bent downward at the frontal-nasal-maxillary hinge at an angle of *c.* 110° relative to the jugal, and the jugal has a laterally compressed expansion and ventral protuberance.

Several characteristics of the bony palate differ between the Ploceidae and *Vidua*, although they were not utilized in the historical debate over *Anomalospiza*. Sushkin (1927) suggested the width of the palatine crests differed between ploceids and viduids. The difference is inconspicuous; although *Anomalospiza* resembles *Vidua* it also is similar to the ploceid *Quelea*. Sushkin also suggested that the shape of the vomer differs between Ploceidae and Viduidae; however, the vomer of *Quelea* is similar to *Vidua*, being cup-shaped. *Anomalospiza* is like an extreme *Vidua* in this respect, the vomer having a deep curling concavity. The parasphenoid rostrum and the nasal were the most consistent characters mentioned by Sushkin as differing between Ploceidae and Viduidae. In both cases the differences are distinct, and in both characters *Anomalospiza* is like *Vidua*. Examination of specimens in UMMZ shows a few additional characters. The medial region of the premaxilla in Ploceidae is ridged (Village Weaver *Ploceus cucullatus*, Red-billed Quelea *Quelea quelea*) or flat (White-billed Buffalo Weaver *Bubalornis albirostris*), but in *Vidua* it is grooved and in *Anomalospiza* there is a very deep median groove. In addition, the pterygoids of *Anomalospiza* differ from both ploceids and the viduids, *Anomalospiza* being broadly flattened and rotated ventrally nearly 80° (like a parrot, e.g. Cockatiel *Nymphicus novaehollandiae*) as they approach the palatines, rather than narrowly flattened as in Straw-tailed Whydah *Vidua fischeri* (*Vidua* also have an ventrally rotated pterygoid). The pterygoid of *Anomalospiza* is much more distinctive in form than that of some other thick-billed finches (the estrildid Black-bellied Seedcracker *Pyrenestes ostrinus*, the ploceid Grosbeak Weaver *Amblyospiza albifrons*, the cardueline Hawfinch *Coccothraustes coccothraustes*).

Inside the mouth of *Anomalospiza* is a thick lateral area that is continuous with a bony ventral protuberance of the jugal bone. This condition is unlike that of other thick-billed finches: Black-bellied Seedcracker and Grosbeak Weaver have a somewhat broadened jugal but these lack a prominence along the middle of the shaft, while Hawfinch has a thickened middle jugal. The thick maxilla of *Anomalospiza* reduces the buccal volume by more than half, to the size of a *c*. 3 x 2 x 2 mm seed. *Anomalospiza* has an extremely forceful bite for a bird of its size (Payne 1997b, pers. obs.). The bill breaks hard seeds and crushes them, as indicated by the shape of the horny palate as discussed below, by the thick, flattened lower mandible and by crushed seeds in the crop.

The thick bill of *Anomalospiza* has several associated unique skeletal features. The extent to which these features are developed in *Anomalospiza* is unparalleled in *Vidua* or in the Estrildidae and Ploceidae. The bill shape and supporting skeletal features appear to be autapomorphies within the genus *Anomalospiza*, and they indicate no recent common ancestry with thick-billed ploceids or thick-billed estrildids.

Bill, mouth and palate

The bill shape of *Anomalospiza* is similar to certain ploceids, such as *Quelea*, which have short bills. However both the horny and bony palates and the mandibles of

Anomalospiza are distinctive, and differ significantly from either *Vidua* or the ploceid weavers.

Sushkin's (1927) analysis suggested differences in the horny palate of the estrildids, viduids and ploceids, but he did not explicitly generalize about each of these larger groups. Nevertheless the horny palate distinguishes Ploceidae and Viduidae, as suggested by Sushkin's descriptions of five ploceids and one viduid species. Examination of UMMZ specimens of four additional ploceids (Grosbeak Weaver, Yellow-crowned Bishop *Euplectes afer*, Village Weaver, Red-billed Quelea) and two additional viduids (Village Indigobird *Vidua chalybeata*, Eastern Paradise Whydah *V. paradisaea*) corroborates the distinction. Ploceidae have lateral ridges in the palate that do not converge, or converge only in the far posterior region, with the median ridge unobstructed for nearly the entire length of the bill. *Amblyospiza* is an exception and has a more generally raised posterior portion of the palate that obscures all ridges. All ploceids, including *Amblyospiza,* differ from the Viduidae. Both *Anomalospiza* and *Vidua* have two large pits bilaterally, near the posterior of the palate. The pits displace the lateral ridges inward; the lateral ridges converge upon and obscure the median ridge, beginning from halfway to two-thirds along the bill and continuing posteriorly. These pits occlude two horny pads in the lower mandible. In *Vidua* a median ridge is present on the palate; in *Anomalospiza* a median ridge is absent, and the horny palate, except the pits, is greatly thickened for crushing hard seeds.

Chapin (1917) wished for a "rearrangement of the groups in accordance with the decorations, or lack of them, in the mouths of their nestlings". Nestling viduid and estrildid finches have mouth markings and gape papillae (Neunzig 1929a,b, Nicolai 1964) that are absent in nestling ploceid finches. Benson & Pitman (1964) and Vernon (1964) found *Anomalospiza* not to have such spots, and Vernon placed it in Ploceidae for this reason. The nestling hosts of *Anomalospiza* do not have gape and palate markings, whereas the nestling hosts of *Vidua* do. In *Vidua* the markings, like those of their host young, may function to elicit parental care from the foster parents (Payne *et al.* 2000, 2001), so the absence of gape and palate markings in *Anomalospiza* might be expected because their hosts have none. Most likely these nestling traits were lost when *Anomalospiza* split from *Vidua* (Sorenson & Payne 2001). In *Vidua* the gape and palate markings continued to evolve in mimicry, as indicated by the close match between each species of *Vidua* and its host species (Nicolai 1964, Payne 1997a,b).

Anomalospiza resemble *Vidua* in the unique pits on the horny palate. Other features of the bill and palate of *Anomalospiza* are uniquely derived, and no features indicate a close relationship with the thick-billed ploceids.

Postcranial skeleton

Chapin (1917) noted that Estrildidae and Viduidae do not differ from Ploceidae on the basis of postcranial skeletal characters, and that the White-billed Buffalo-Weaver *Bubalornis albirostris* has an anterior sternal spine and foramen complex that is unusual among passerines. Later, Chapin (1954) found a similar configuration in *Anomalospiza*. Examination of UMMZ skeletal specimens shows that *Anomalospiza* resembles Red-billed Buffalo Weaver *Bubalornis niger*, White-billed Buffalo Weaver and White-headed Buffalo Weaver *Dinemellia dinemelli*, and these differ from other passerines, in having a sternum with a large spina interna and the spina externa fused anteriorly into a laterally bifid tip, but separate posteriorly with a foramen near the dorsal base of the spinae sternale. This anterior sternal foramen is a medial extension of the sulcus carinae and it accommodates the angulus medialis of the coracoid, the bone that articulates with the sulcus carinae of the sternum. Other finches (*Vidua*, *Spermophaga*, *Amblyospiza*) have a large bifid spina externa as do most passerines, but these finches lack a spina interna dorsal to the sulcus carinae; the sulci barely meet dorsal to the spina externa, and they lack a medial foramen at the base of the complex. There are no other unusual skeletal features in which *Anomalospiza* resembles these two buffalo weaver genera, and their anterior sternum complex appears to have evolved independently in these birds.

Appendicular muscles

Bentz (1979) examined the appendicular myology of *Anomalospiza imberbis*, 10 species of ploceids, 28 estrildids and a viduid finch (Eastern Paradise Whydah). *Anomalospiza* was equally similar to the ploceids and *Vidua* in all five forelimb muscles and in four of six hindlimb muscles examined. One hindlimb muscle (M. obturatorius lateralis pars dorsalis) was small in *Anomalospiza*, variable in size in the ploceids, and absent in *Vidua*. M. iliotrochantericus medius was present in *Anomalospiza* and all ploceids, but absent in the *Vidua*. Only two muscles differed between *Anomalospiza* and the one *Vidua* species examined, and one of these was variable within Ploceidae. The appendicular muscles that have been examined do not provide useful information on finch phylogeny and more studies are needed.

Eggs

Viduids and estrildids lay unmarked white eggs, whereas the ploceids lay eggs of a variety of colours with a variety of spotting patterns (Friedmann 1960, Lahti & Lahti in press). Payne (1944) described an apparent *Anomalospiza* egg (he did not allow it to hatch), pink and purple with darker blotches and spots, unlike the bluer eggs of the host *Prinia*. Vernon (1964) compiled other observations of known *Anomalospiza* eggs which were similarly coloured to those of the hosts, and ranged from white to light blue, sometimes with speckles. If *Anomalospiza* eggs match those of their hosts, egg colour is not a useful phylogenetic character because it has been shaped by natural selection in association with brood parasitism. *Anomalospiza* and *Vidua* also have a larger clutch (number of eggs laid in a set, though usually not in a single nest) and smaller eggs relative to their body size than those of most ploceids (Payne 1977).

Behaviour

With the evolution of brood parasitism one expects significant divergence in behaviour, including those relating to courtship and mating. Even though behaviours may be secondarily derived in adaptation to brood parasitism (Friedmann 1960), such adaptations could arise more than once, so behaviours may be uninformative with respect to phylogenetic relationships. On the other hand, breeding behaviour could be uniquely derived within a clade, and consistent differences between the brood parasitic finches and the nesting finches in courtship displays and song behaviour may corroborate the molecular genetic results in determination of finch systematics.

The behaviours described below are consistent with the idea of a common origin of *Anomalospiza* and *Vidua*, but the behaviours are not unique to these birds, and some behaviours are adaptations to their brood parasitism of certain hosts.

Breeding display

The breeding display of male *Anomalospiza* differs from the aerial bobbing of most *Vidua*. *Anomalospiza* males display by fanning their wings at the female while perched (Williams & Keith 1962, pers. obs.) like many ploceid weavers (Crook 1958). However, Straw-tailed Whydahs display while perched in a similar manner (Nicolai 1969, Payne *et al.* 2002).

Egg removal

Friedmann (1960) remarked that *Vidua* egg removal from host nests exists "only to the extent of obviating what would otherwise be excessive crowding". Cheesman & Sclater (1935), however, suggested that *Anomalospiza* females regularly remove the host eggs, and generally only the parasite survives to leave the nest. Later, Vernon (1964) found that *Anomalospiza* does indeed remove all eggs in the host nest at the time of laying. *Vidua* females occasionally remove a host egg from the nest, but this is unusual in the field although common in captivity (Morel 1973, Payne *et al.* 2000, 2001). Unlike most other brood parasitic birds, *Vidua* chicks show no aggressive behaviour toward their nestmates, and the young in a parasitized nest usually fledge together with the host young and often with other young *Vidua* (Morel 1973, Payne *et al.* 2000, 2001). Usually the young *Anomalospiza* alone fledge in their host nest; although egg removal by the female is certainly a cause of this, the nestlings may trample or physically displace the host chicks as well (Friedmann 1960, Vernon 1964).

Feeding behaviour and foster parental care

Vidua feed on fallen grass seeds where they scratch the ground with both feet ("double scratch") nearly simultaneously to uncover seeds, hop backwards, then pick up the exposed seeds. Poulsen (1953) suggested that scratching during foraging is distinctive of Viduidae (in contrast to Ploceidae); the behaviour has been observed in most species of *Vidua* as well as in several New World Emberizidae (Greenlaw 1977). Although *Anomalospiza* feed on the ground, they have not been seen to double-scratch in the field, nor were captives that were observed for three years, even though they had sand in their aviary (RBP). Because the behaviour is common in two unrelated families and it occurs occasionally in other songbirds, it appears to have developed independently in *Vidua* and in other ground-foraging birds (Greenlaw 1977).

Vidua nestlings and fledglings feed by crouching, twisting the head and neck, waving the head from side to side and begging with the head upside down, like young of their foster estrildid hosts, whereas *Anomalospiza* young beg in an upright position without the head waving movements (Nicolai 1964, Friedmann 1960). The differences between *Anomalospiza* and *Vidua* in fostering behaviour involves a difference in nestling feeding. Young *Anomalospiza* receive insects from their foster parents held in the bill (*Cisticola* and *Prinia*) (Pakenham 1939, Benson & Pitman 1964, Vernon 1974), whereas young *Vidua* are fed seeds regurgitated by their estrildid foster parents (Nicolai 1964, Payne *et al.* 2001).

Vocalizations

The flight call of *Anomalospiza* was described by Vincent (1936) and Williams & Keith (1962) as a hard "jit-jit" or "cheet-cheet" and song as a high, chirping "choop-ee-choo" or a thin, sibilant "tissiwick" and "tissiway". Stevenson & Fanshawe (2002) described the flight call as a fast "tititititit", and song as a "swi-sun-suit" with a weaver-like quality and sometimes with a long wheezy "vweeeeeooooo".

Songs were recorded at Lochinvar National Park, Zambia, in 1974, and at Belvedere marsh, Harare, Zimbabwe, in 1991 (Fig. 1). The song lasts about 4 s and

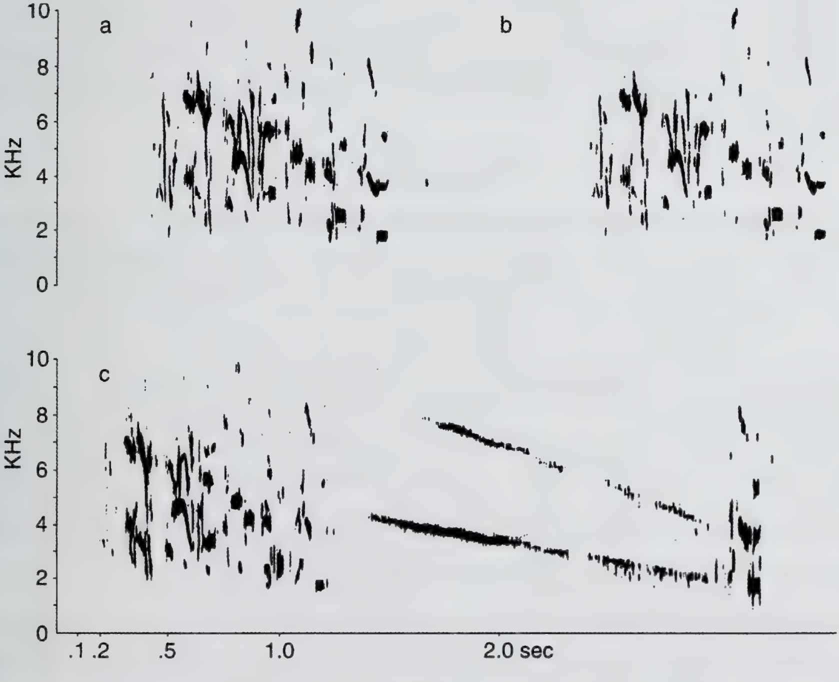

Figure 1. Audiospectrograms of songs of a male *Anomalospiza imberbis* at Lochinvar National Park, Zambia. a, b, short song; c, long song with whistle-buzz.

consists of three parts: (1) chirping notes are given in a repeated pattern, the series drops in pitch from 8 to 2 kHz and lasts 1.0-1.2 s. Each note type is given once, and ranges in length from 0.05-1.8 s; individual notes have a half-tone (a frequency trace occurs at half the pitch of the loudest trace) and most notes drop in pitch. This sequence is often given alone, and it is repeated almost exactly (Fig. 1). (2) a descending whistle-buzz "choo" or "vweeeeeooooo" is given, not as loud (by 10 dB) as the chirping series. This complex sound has a descending whistle with an upper trace beginning at 9 kHz and dropping to 4 kHz, a lower trace at half that frequency, and each trace with a descending buzz at half the frequency of the whistle; the whistle-buzz lasts 1.6 s. The whistle-buzz sounds like song-buzz of Village Weaver (Collias 2000) and the "kazoo" call of Dybowski's Twinspot *Euschistospiza dybowskii* (Payne & Payne 1995); (3) chirp at the end, with peak frequency the same as end of the whistle-buzz. Most songs included only the chirping series; three of 14 had the whistle-buzz. Songs in Zimbabwe were similar to those in Zambia though only in Zambia were the whistle-buzz elements recorded. These elements are of low amplitude, and the songs in Zambia were recorded at a distance of < 10 m. Unlike most *Vidua* species, *Anomalospiza* does not mimic the song of its host species; no songs were recorded or heard like those of the local *Prinia* or *Cisticola* species.

Anomalospiza song has similarities both to certain ploceids (*Ploceus cucullatus*) and estrildids (*E. dybowskii*), and it is like the complex nonmimetic songs of certain species of *Vidua* (Village Indigobird, Payne 1973, 1985; Straw-tailed Whydah, Payne *et al.* 2002). The nonspecificity of song characters of *Anomalospiza* are consistent with more than one proposed systematic relationship, nevertheless the complex chirp is like that of certain *Vidua* species.

Conclusion

The bases upon which phylogenetic relationships were estimated for *Anomalospiza* in the past have been: (1) certain behaviours related to brood parasitism, (2) length of the outer primary, (3) mouth patterns of nestlings, (4) plumage colour, (5) seasonal plumage change, and (6) bill shape. The major systematic works that presented arguments for the relationship of *Anomalospiza* before Sorenson & Payne (2001) did so based on a subset of the above criteria (Chapin 1917, Delacour 1943, Bannerman 1949, Chapin 1954, Friedmann 1960). In fact the use of these few and discordant characters is responsible for the confusion that has existed over the relationships of this bird. None of these characters in isolation indicate the phylogenetic relationship of *Anomalospiza*, either because they are derived autapomorphic states within the genus (1, 6 and probably 3), or they do not consistently differ between Viduidae and Ploceidae (2, 4, 5).

Several traits differ between *Vidua* and *Anomalospiza*, and these relate to individualistic adaptations involved in brood parasitism or to other autapomorphisms. Among these are nestling mouth markings, begging and feeding behaviour, and egg colour (Payne 1998). Removal of host eggs by the female differs between the two genera, and the breeding displays and the double-scratch foraging technique of *Vidua* have not been seen in *Anomalospiza*. *Anomalospiza* has a distinctive bill and palate structure with a thickening of both the maxilla and adjacent horny palate that are adapted to the processing of hard seeds, and its sternal configuration also is uniquely derived.

Consistent with modern molecular and phylogenetic analyses, several characters support a close relationship between *Anomalospiza* and *Vidua*, and differ between Viduidae and Ploceidae. Most significantly, the skull pneumatization, the bony palate, the horny palate and several details of pterylosis of *Anomalospiza* are typically viduid. Both their morphological and behavioural traits and their molecular genetics indicate a sister relationship between *Anomalospiza* and *Vidua*.

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A description of copulation in the Kori Bustard *Ardeotis kori struthiunculus*

by Sara Hallager

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Bustards are an Old World family with 25 species in 6 genera (Johnsgard 1991). Medium to large ground-dwelling birds, they inhabit the open plains and semi-desert regions of Africa, Australia and Eurasia. The International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Animals lists four species of bustard as Endangered, one as Vulnerable and an additional six as Near-Threatened, although some species have scarcely been studied and so their true conservation status is unknown. Agricultural changes, overgrazing, hunting, trapping, habitat loss, droughts and wars are the foremost threats facing all bustard species.

The Kori Bustard *Ardeotis kori* is a large polytypic bustard with two subspecies classified according to geographical distribution, size and plumage variations. One population, *A. k. struthiunculus,* resides in eastern Africa; the nominate race *A. k. kori* occurs in southern Africa (Johnsgard 1991). Kori Bustards are polygynous (Johnsgard 1991) and males gather singly or in loose lek-like formations to display to females during the breeding season. With neck inflated and wings drooping, a male struts around snapping his bill and producing a booming sound. If he is successful in attracting a female to his territory, copulation ensues, after which the male returns to his display grounds to attract another female. He plays no part in incubation nor in rearing the chicks.

The breeding biology of most bustards is poorly known and the events leading up to and including copulation are known for only a handful of species. The circumstances surrounding copulation have been described fully for wild populations of Great Bustard *Otis tarda* (Cramp & Simmons 1980, Blotzheim 1973), Little Bustard *Tetrax tetrax* (Moseykin 1992, Frish 1976), Great Indian Bustard *Ardeotis nigriceps* (Ali & Rahmani 1984), Houbara Bustard *Chlamydotis undulata* (Urban *et al.* 1986), and captive Australian Bustard *Ardeotis australis* (Fitzherbert 1978). Partial descriptions exist for wild Lesser Florican *Eupodotis indica* (Dharmakumarsinhji 1950), Black-bellied Korhaan *Eupodotis melanogaster* (Kemp & Tarboton 1976) and Bengal Florican *Eupodotis bengalensis* (Rahmani *et al.* 1988). Despite the fact that Kori Bustards are large and conspicuous birds, the events surrounding copulation have not been previously described.

A breeding flock of Kori Bustards *Ardeotis kori struthiunculus* has been maintained at the Smithsonian National Zoological Park (SNZP) in Washington DC since 1997. This paper describes, for the first time, the events surrounding copulation in this polygynous species. Comparisons with the copulatory behaviour of other polygynous bustards are also provided.

Description of mating in the Kori Bustard

Copulation was observed on three occasions at the SNZP. The event was always observed from the public viewing area of the exhibit. Because the birds were accustomed to people in this area, the author's presence did not appear to interfere with the behaviour of the birds. In all instances, the same female was involved, although a different male was present each time. Copulation always occurred when the male was at peak display (i.e. neck inflated, wings drooping and booming). The events leading up to, including and following copulation can be divided into four sequences. The description that follows is typical of each observed copulation event.

Initiation of copulation

During the SNZP breeding season, May - October, the male displayed nearly continuously in the presence or absence of females. The level of display varied from low (inflated neck and cocked tail) to high (inflated neck, drooped wings and booming). His display intensified when a female was in view. Increased levels of display were often accompanied by relentless pursuing of the female. A female Kori Bustard near to a displaying male appeared quite uninterested in the male, outwardly appearing to ignore and even avoid him. The events leading to copulation were initiated by a receptive female who began the sequence by lying down near the displaying male.

Pre-copulation

Once the female was seated, the male approached her from behind. He approached her either in full display with his neck inflated and wings drooping or in partial display with his neck inflated and his tail feathers raised. He stood over the female and began to peck at the back and sides of her head in a slow and deliberate way, his tail and crest feathers raised slightly. At each peck, the female recoiled slightly. The male stood for 5 - 10 min alternately pecking at the female's head and stepping from side to side behind her before he sat down on his hocks and continued pecking at the back of her head for another 5 min. The female remained seated throughout the entire bout of head pecking.

Copulation

After 10 - 15 min of head pecking, the seated male moved closer towards the sitting female using his hocks to progress forward. As he approached the female's cloacal area, he spread his wings and mounted her from behind. Presumably, the female lifted her cloaca so that she could make cloacal contact with the male, but this was not observed. Actual copulation lasted no more than a few seconds.

Post-copulation

Immediately following copulation, both birds rose and parted quickly, violently shaking their feathers. On two occasions, the female made a 'barking' sound as she moved away from the male. Following copulation, both birds resumed other activities, with the male often resuming display.

Comparisons with other polygynous bustard species

In the few polygynous bustard species for which full or partial descriptions of copulation exist, the events leading up to, including and following copulation are similar to those observed in the Kori Bustard.

Initiation of copulation

The type of display in bustards varies from species to species, but the purpose of display in all male bustards is the same - to attract females. Once a male has managed to attract a female, observers of Great Indian Bustard (Ali & Rahmani 1984), Little Bustard (Moseykin 1992), Bengal Florican (Narayan 1990) and Great Bustard (Blotzheim 1973) document that the female of each species appears uninterested in the displaying male, often deliberately avoiding his advances. Pursuit of females may serve to stimulate and prepare the females for copulation (Johnsgard 1991). Female Great Bustards have been observed initiating copulation by pecking at the cloacal area of the male (Johnsgard 1991), but this has not been reported in any other bustard species. For the species in which copulation has been described, a receptive female takes the initiative for copulation by assuming a sitting position.

Pre-copulation

All existing descriptions of pre-copulatory behavior in bustards involve the male standing over the female and pecking at the back of her head. The duration of this head pecking appears to vary between species and even within species. For example, in the Great Indian Bustard (Ali & Rhamani 1984), pecking behavior lasted up to 16 min. In contrast, the same behaviour in the Australian Bustard varied from 22-33 minutes (Fitzherbert 1978) while in the Great Bustard head pecking occurred for only few minutes (Cramp & Simmons 1984). Head pecking has been reported for the Lesser Florican (Dharmakumarsinhji 1950), Bengal Florican (Rahmani *et al.* 1988) and Houbara Bustard (Launay 1990) but the duration has not been reported for any of these species.

Copulation

In all species where copulation has been observed, the event occurs very rapidly. Observations of copulation in Great Indian Bustard (Ali & Rahmani 1984), Great Bustard (Blotzheim 1973), Australian Bustard (Fitzherbert 1978), Houbara Bustard (Launay 1990) and Little Bustard (Schulz 1986) report the event lasting only a few seconds.

Post-copulation

Post-copulatory behaviour observed in Great Bustard (Blotzheim 1973), Australian Bustard (Fitzherbert 1978), Great Indian Bustard (Ali and Rahmani 1984), Houbara Bustard (Launay 1990), Bengal Florican (Narayan 1990) and Little Bustard (Moseykin 1992) reveal that males and females separate rapidly and resume other activities. Males frequently resume displaying to attract other females (Johnsgard 1991).

Polygyny versus monogamy in bustards

Among the 25 species of bustard, present evidence indicates the majority are polygynous. There is a wide range of size and plumage dimorphism between the sexes and males advertise themselves on dispersed display grounds (leks) using extravagant displays (Johnsgard 1991). Lekking mating systems occur typically when males are removed from parental care and the environment provides little potential for resource or mate control (Emlen & Oring 1977). In polygynous bustards which have males who lek in most species, these conditions are met: precocial young free the male from parental care, an omnivorous food supply is scattered and widely available, ground nesting ensures plenty of available nesting sites, and low densities of females suggest that males are not able to defend females economically (Dale 1992). Thus, as Emlen & Oring (1977) state, the ecology of bustards has a high "environmental potential for polygamy".

Not all species of bustards are polygynous. In the genus *Eupodotis*, there are at least three and perhaps five monogamous species. The Black-Throated Bustard *Eupodotis vigorsii*, Blue Bustard *Eupodotis caerulescens* and White-Bellied Bustard *Eupodotis senegalensis* are monogamous (Goriup pers. comm.) and it is speculated that monogamy occurs in Ruppell's Bustard *Eupodotis rueppellii* and Little Brown Bustard *Eupodotis humilis* (Johnsgard 1991), although data on these species are lacking and anecdotal. What little is known of the mating strategies of any of these species contrasts with that of polygynous bustards in that these species form monogamous pair bonds throughout the year, often calling together to maintain the pair bond (Johnsgard 1991). In contrast to polygynous bustards, there are no known male self-advertisement displays and both sexes are monomorphic in size and plumage.

Because of a scarcity of data on these small African bustards, it is difficult to speculate why any of them might be monogamous. Perhaps the tendency to occur in more open and arid habitats than other bustards may play a role. Dale (1992) speculated that the harsh environmental conditions that these species typically occur in could limit "male emancipation from parental care" although to what extent the males of these species contribute to the raising of chicks is unknown. If resources are limited where these species live, then the importance of the male in defending territories might be a reason for monogamy (Dale 1992). Meaningful conclusions about the importance of monogamy in any bustard species cannot be made until more is known about the general biology and ecology of the birds.

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On the migratory status of the Patagonian population of the Striped Woodpecker *Picoides lignarius*

by Juan Mazar Barnett

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The Striped Woodpecker *Picoides lignarius* occurs in Patagonian forests and woodlands at the base of the southern Andes in Chile and Argentina. In Chile it occurs from Coquimbo (*c.* 29°S) south to Ultima Esperanza, Magallanes (*c.* 53°S) (Hellmayr 1932, Housse 1945, Johnson 1967, Araya & Millie 1986). In Argentina its latitudinal range is more restricted, from northwest Neuquén (*c.* 37°S) south to southern Santa Cruz province (*c.* 53°S) (Short 1982, Winkler *et al.* 1995, de la Peña 1999). It occurs from the lowest valleys and near sea level to 2,000 m (Hellmayr 1932, Short 1982, Fjeldså & Krabbe 1990, Chébez *et al.* 1993). The species has also been cited for Mendoza province, Argentina (Steullet & Deautier 1946), and repeated, e.g. by Pergolani de Costa (1965) and Canevari *et al.* (1991). Earlier mentions for Corrientes and Entre Ríos provinces (Grant 1911) were dismissed by Hellmayr (1932) and Steullet & Deautier (1946). *Picoides lignarius* has historically been cited from Córdoba and La Rioja provinces in central Argentina (where its closest relative, the Checkered Woodpecker *P. mixtus* occurs), and it has been considered a migrant to this region by many authors. These provinces are 800–900 km north of the northern edge of the current known range of *P. lignarius* in Patagonia. A second, allopatric population of *P. lignarius* inhabits dry intermontane valleys of central Bolivia and northwest Argentina (Fjeldså & Krabbe 1990, Mazar Barnett *et al.* 1998). This resident population is best treated as a separate taxonomic unit (Mazar Barnett 2001) and therefore this analysis considers only the southern, Patagonian *P. lignarius*.

During a study of the taxonomy and distribution of the South American *Picoides*, I examined both the literature and museum specimens to elucidate the controversy surrounding the migratory status of Patagonian *P. lignarius* and its occurrence in central Argentina. This, coupled with communications with several colleagues, led me to re-evaluate previous data and reach new conclusions concerning the species' distributional range and movements.

Historical data

Picoides lignarius was originally described from 'Chile', and all subsequent authors have reported it from Patagonian localities in Chile and Argentina. It was first mentioned for Córdoba province by Hargitt (1890), who noted two specimens from Cosquín. All subsequent authors included Córdoba within the species' range without further details. Key Argentine references that did so include Dabbene (1910), Steullet & Deautier (1946), Zotta (1944), Olrog (1959), Pergolani de Costa (1965), Olrog

(1979), Canevari *et al.* (1991), de la Peña (1994), as well as Hellmayr (1932), Peters (1948), Philippi (1974), Short (1982), Winkler *et al.* (1995) and Sibley (1996). All appear to have repeated the original mention by Hargitt (1890). Nores *et al.* (1983) did not include the species in their Córdoba list, but in a footnote stated that 'it is cited for Cosquín by Hargitt (1890) and subsequently by Olrog (1959, 1963, 1979), as a winter visitor', whereas later Nores (1996) went further to include it in a list of only 'doubtful' species, citing Hargitt (1890).

Koslowsky (1895) was the first to mention it for La Rioja province. He stated that in Chilecito 'only one individual was seen and hunted in a farm; it is a female'. Again, all of the above authors cited the species for La Rioja in obvious reference to Koslowsky's (1895) report (e.g. Steullet & Deautier 1946). Fontana (1908) was the only author to question the presence of *P. lignarius* in La Rioja, while Cory (1919) and Hellmayr (1932) appeared to overlook this. Olrog (1963) did not mention either Córdoba or La Rioja provinces within the species' range, in spite of the footnote in Nores *et al.* (1983).

Since Olrog (1959) first noted the species as a migrant to these provinces, most of the above authors (who seemed to repeat the Córdoba and La Rioja data of Hargitt [1890] and Koslowsky [1895], respectively), also appear to have repeated Olrog's (1959) statement thereafter. Thus, the current mainstream literature states that *P. lignarius* is a partial austral migrant during the winter (e.g. Olrog 1979, Meyer de Schauensee 1982, Short 1982, Fjeldså & Krabbe 1990, Canevari *et al.* 1991, Chesser 1994, de la Peña 1994, Winkler *et al.* 1995, Parker *et al.* 1996, Sibley 1996, de la Peña & Rumboll 1998), although others have made no mention of this (e.g. Olrog 1963, 1968, 1984, Narosky & Yzurieta 1987, de la Peña 1999). Only Chébez *et al.* (1993) suggested this statement requires confirmation.

Evidence from the literature and local ornithologists

It is clear that the general belief that Patagonian *P. lignarius* is migratory stems from the repetition of earlier references in general works. However, perusal of a suite of local, regional or more specific literature suggests otherwise. Indeed, Short (1982) regarded only the Argentine population to be migratory. Wetmore (1926) reported three early June 1912 specimens from the upper río Las Bayas, Río Negro, Argentina, and Kuroda (1933) mentioned a pair collected at S. Boronol Perquenco, Cautín, Chile, in July 1931, with two late May specimens coming from Barrancas, central Chubut, Argentina (Camperi 1998). Philippi (1937) regarded it as resident at Aconcagua, Chile. Housse (1945) mentioned only altitudinal movements for the species in Chile, stating that 'only in winter it reaches the cultivated lowlands', while Johnson (1967) regarded it as a 'resident nesting species throughout its range' in Chile. Christie (1984) catalogued it as a permanent resident at Nahuel Huapi National Park, Río Negro, Argentina, and Ippi (2001) considered it resident in the Challhuaco Valley, in the same general region.

From its southernmost range, reports also seem to contradict the view that the species is migratory. Venegas (1986) regarded it as a resident at Magallanes, performing only 'local migrations', although subsequently Venegas & Sielfeld (1998) regarded it as resident there, and made no reference to local movements. Couve & Vidal Ojeda (1999) mentioned such movements, stating that the species is a 'resident, breeder, although part of the population undertakes short migratory movements to more temperate sections during the winter' at Torres del Paine National Park, Magallanes, Chile, where Garay & Guineo (1993) noted it as 'annual'. The extent and scale of such movements is intangible from the literature cited. It is worth recording that Olrog (1948) mentioned the acquisition of six specimens on several dates in June 1941 at Hotel Río Rubens, Magallanes, Chile. However, the published dates are incorrect as to month, as these specimens (deposited at the Swedish Museum of Natural History) were actually taken in January (G. Frisk *in litt.* 2002).

These data are complemented by recent observations by local ornithologists throughout the species' range. It has been considered to be equally abundant year-round in the Nahuel Huapi area, with family groups remaining throughout the winter (V. Ojeda *in litt.* 2002). It is also a permanent resident at Lago Puelo National Park, Chubut, Argentina, where it performs only altitudinal movements (F. Vidoz *in litt.* 2000). It was recorded in July during two consecutive years from near San Martín de los Andes, Neuquén, Argentina (G. Dupuy *in litt.* 2000, 2002). In Magallanes, E. Couve (*in litt.* 2002) confirms it is a year-round resident in the general area, performing only local movements, mainly altitudinally.

Evidence from museum specimens

What of the specimens from which all the apparent confusion arose? I was able to locate the Córdoba specimens cited by Hargitt (1890), housed at the Natural History Museum, Tring (NHM), and these held key details on their labels. Specimen 89.2.26.112 was originally labelled as '*Chloronerpes maculatus* ♂' (a junior synonym of *P. mixtus*), and was collected at Cosquín, on 8 August 1882, by E. W. White. The NHM tag stated '*Picus mixtus*', and it was annotated '*Dendrocopus lignarius* (Mol.) ♂ imm' on the back, perhaps by E. Hargitt himself, probably by 1889 when it was accessioned, or 1890 when Hargitt's catalogue was published. These labels contained annotations by Lester L. Short as follows. On the original tag he noted: 'Seems ad. Its measurements, for a ♂ place it in the range of overlap, as do certain other characters. Should be compared with more *D. m. berlepschi*, *lignarius* x *mixtus*? LLS '66'. On the museum label, where '♂ imm.' is noted, it is clear that Short believed it to be an adult, by adding 'no' (pointing to the 'imm'), and '= ad.', as well as his initials and date, again. Having examined about 350 *Picoides* in American and European museums, I find this specimen unlike *P. lignarius*, and with characters of the Chaco populations of *P. mixtus*, such as the body measurements, and the pattern of dorsal and ventral markings. Specimen 89.2.26.113 was originally labelled as '*Chloronerpes maculatus* ♀', and was also collected at Cosquín, on 15 August 1882, by E. W. White. The NHM tag was again annotated, '*Dendrocopus lignarius* (Mol.) ♀ ad'. Short noted on the original label: 'By conventional knowledge this has to be *mixtus* LLS '66'. I also consider this specimen another clear example of *P. mixtus*.

The female collected by Koslowsky (1895) at Chilecito, La Rioja, was examined by Steullet & Deautier (1946) but it appears to have gone missing since, as it could not be located at Museo de La Plata, nor could I find any details of it in the accessions catalogue.

Besides the specimens mentioned above, I could only find a few Córdoba or La Rioja specimens in museum collections. All were clearly *P. mixtus*. It is noteworthy that a specimen from Samay Huasi, near Chilecito (where Koslowsky's [1895] supposed *P. lignarius* came from), agrees well with the characters of *P. mixtus* in that region (see Camperi & Darrieu 2001), and so do the *Picoides* populations in Mendoza (see Reed 1916, Contreras 1980).

Conclusions

The reports of *P. lignarius* for Córdoba and La Rioja provinces in most recent literature all refer to repetition of the original references for these provinces. The view that it migrates to these areas in winter stems from an *assumption*, without presenting additional information, and the perpetration of this mistake. Study of specimens upon which the presence of *P. lignarius* in these provinces was based reveals that those from Córdoba (originally labelled as *P. mixtus*) were subsequently misidentified, as was likely the case with the one from La Rioja, now lost. The available study skins and literature from these regions demonstrate that only *P. mixtus* occurs there. Furthermore, there are no recent mentions of *P. lignarius* north of Neuquén province, outside the Patagonian forest, in Argentina. The review of specific literature, coupled with comments from current local ornithologists show that *P. lignarius* is resident throughout its range, and it is likely that it only performs regional movements, possibly in response to particularly harsh winter conditions.

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Bertram Lutley Sclater and Bertram's Weaver *Ploceus bertrandi*

by R.J. Dowsett & J.A. Jobling

Received 22 August 2002

Shelley (1893: 23-24) named a new weaver from Nyasaland (now Malawi) *Hyphantornis bertrandi* after "Bertram Lutley Sclater". The following year he named a race of bush-shrike after him, *Laniarius bertrandi* (Shelley 1894: 15), now *Malaconotus olivaceus bertrandi*, again with the same spelling in each case. Sclater's brother William Lutley Sclater (1930) used the English name "Bertram's Weaver".

Until recently all authors of regional avifaunas have assumed that this was no error by Shelley, and that he did intend to latinize the name Bertram as Bertrandus, in what is currently known as *Ploceus bertrandi* (e.g. Benson *et al.* 1971, Mackworth-

Praed & Grant 1963). However, both Wynne (1969) and Jobling (1991) gave his name as Bertrand L. Sclater, and Sibley & Monroe (1990) gave *P. bertrandi* the English name of Bertrand's Weaver.

In order to decide if this change to the English name was justified, enquiries were made of Wellington College, Berkshire, where B.L. Sclater was educated. Bertram Lutley Sclater (1866-1897), son of Philip Lutley Sclater, was a pupil at Wellington College 1880-1883. In 1883 he joined the Royal Military Academy, Woolwich, and in 1885 became a lieutenant in the Royal Engineers. From 1891-1893 he served in Nyasaland and in 1894 was attached to the Intelligence Department, being promoted to Captain in 1895. He did not himself collect the birds named in his honour (they were obtained by Alexander Whyte), but Shelley and his father Philip Lutley Sclater (Shelley 1893: 2, 24) mentioned that he was "Mr. Johnston's principal officer in Nyassaland, and Commander of his police force" (i.e. right-hand man to the Commissioner, the future Sir Harry Johnston). He died in Zanzibar on 25 July 1897 (Rangeley 1958) while engaged in building the Uganda Railway.

So, the correct substantive name of *Ploceus* (*Hyphantornis*) *bertrandi* is Bertram's Weaver. We can only assume that Shelley thought "bertrami" too ugly and coined the Latin equivalent bertrandi. We are not aware of this name being used specifically for any other bird (or mammal), but note that Riley (1931: 279) had no compunction in naming as *bertrami* a new form of the butterfly *Charaxes varanes* from Oman.

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The Membership List 2003 is available, free of charge, on application to the Hon. Secretary (address below). This shows addresses (including E-mail addresses, where known), for all paid-up Members as at 31 December 2002. Members are requested to inform the Hon. Secretary of all corrections or changes, without delay, for despatch of the *Bulletin*. To offset the cost of postage, any contribution, or a stamped and addressed (A5-sized) envelope will be gratefully accepted.

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Authors are invited to submit papers on topics relating to the broad themes of taxonomy and distribution of birds. Descriptions of new species of birds are especially welcome and will be given priority to ensure rapid publication, subject to successful passage through the normal peer review procedure; they may be accompanied by colour photographs or paintings. On submission, manuscripts, **double spaced** and with **wide margins**, should be sent to the Editor, Prof. Chris Feare, preferably by email, to feare_wildwings@msn.com - if files are large, please contact the Editor by email before sending them. Alternatively, **two copies** of manuscripts, typed on one side of the paper, may be submitted to the Editor, 2 North View Cottages, Grayswood Common, Haslemere, Surrey GU27 2DN, UK. Where appropriate half-tone photographs may be included and, where essential to illustrate important points, the Editor will consider the inclusion of colour figures (if possible, authors should obtain funding to support the inclusion of such colour illustrations).

As far as possible, review, return of manuscripts for revision and subsequent stages of the publication process will be undertaken electronically.

For instructions on style, see the inside rear cover of *Bulletin* 123 (1) or the BOC website:

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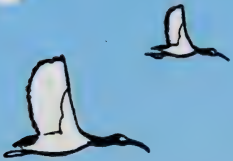

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Volume 123 No. 3
September 2003

MEETINGS are normally held in the **Sherfield Building** of **Imperial College**, South Kensington, London, SW7. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. [Limited car parking facilities can be reserved (at a special reduced charge of **£5.00**), on prior application to the Hon. Secretary].

The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7.00 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about 8.00 pm.

Dinner charges were increased to **£18.50**, as from **1st January 2003.**

FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

Tuesday 4 November - Professor Tim Birkhead on *"Darwin: birds and sexual selection"*.
Tim Birkhead is professor of behaviour and ecology at the University of Sheffield. Most of his research in the last ten years has been on sexual selection in birds, and on sperm competition in particular. His books *'Sperm competition and sexual selection'* (1998) and '*Promiscuity*' (2000)

have summarised the recent developments in this active area of research. His research has taken him around the world, including the Canadian Arctic, Africa and North America. He is committed to the public understanding of science, teaches history and philosophy of science and writes regularly for *New Scientist*, *BBC Wildlife*, *Natural History* and *The Independent*. His interests in birds, history and science are combined in his forthcoming book: *'The Red Canary'*.

*Applications to the Hon. Secretary by **21 October,** please.*

Tuesday 2 December Amberley Moore and James Jobling - "*The unknown traveller - the ornithological collections of Louis Fraser*".
In mid-nineteenth century Britain Louis Fraser (c. 1819-1883) was one of the first generation of working zoologists. Although he had little formal education he became acknowledged by his peers as an excellent naturalist. He made important collections of birds and animals in West Africa and in Ecuador between 1840 and 1860. His large ornithological collection, from Africa and South America, included type material of over 100 species, much of it now held in the Natural History Museum at Tring. He contributed over forty papers to the *Proceedings of the Zoological Society* of London and was the author and publisher of *Zoologica typica* and a catalogue of the 13th Earl of Derby's collections at Knowsley.

He was widely known in the two decades of 1840 and 1850, but little of his life after that is certain and today he is largely unknown.

*Applications to the Hon. Secretary by **18 November** please.*

Future meetings, in 2004. The following **Tuesdays** have been booked for seven meetings:
20 January, 23 March, 27 April (AGM), 22 June, 27 September, 2 November and 7 December.

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2004, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA, UK. Tel/FAX: 01730-825280 (or Email: mbcasement@aol.com).

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CLUB NEWS

The Hon. Editor. Prof Chris Feare, who has edited the *Bulletin* since 1997, is retiring from this position in order to concentrate on other activities. The Committee has appointed Guy Kirwan to take over the duties from January 2004.

The 916th meeting of the Club was held Tuesday 29 April 2003, in the Sherfield Building Annexe, Imperial College, following the Annual General Meeting. 22 Members and 10 guests were present.

Members attending were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, I.R. BISHOP, Cdr M.B. CASEMENT RN, Dr J.H. COOPER, Prof. C.J. FEARE, D.J. FISHER, J.B. FISHER, F.M. GAUNTLETT, Rev. T.W. GLADWIN, D. GRIFFIN, J.P. HUME, J.A. JOBLING, D.J. MONTIER, Mrs A.M. MOORE, Mrs M.N. MULLER, P.J. SELLAR, S.A.H. STATHAM, F.D. STEINHEIMER, C.W.R. STOREY, M.P. WALTERS and Mrs F.E. WARR.

Guests present were: Ms G. BONHAM, Mrs C.R. CASEMENT, Mrs B. FISHER, Mrs M.H. GAUNTLETT, Mrs J.M GLADWIN, Mrs M. MONTIER, P.J. MOORE, C.A. MULLER, A. MANEGOLD and J. WARR.

After dinner, a series of short talks was given by Members on subjects of topical interest; the following is a brief synopsis of the main points presented:

Julian Hume gave an illustrated talk on ***The white Dodo and reunion Solitaire - the merging of myth and reality.*** The dodo of Mauritius *Raphus cucullatus*, along with the less familiar solitaire *Pezophaps solitaria* of Rodrigues comprises the endemic Mascarene family Raphidae. For the last two centuries, a third member of the family was thought to exist, namely the White Dodo of Réunion Island. However, this bird was founded on misinterpretation and erroneous attribution and originated from a merging by later interpreters of travellers' tales of large whitish birds (termed 'solitaires') with some enigmatic Dutch paintings of white dodos executed in mid-seventeenth Century. The discovery of the first subfossil skeletal material in the 1970s revealed that the bird that travellers called a 'solitaire' was in fact an ibis, derived from the Egyptian Ibis *Threskiornis aethiopicus* or the Straw-necked Ibis *T. spinicollis*. Furthermore, the Dutch paintings of white dodos by Pieter Holsteyn II and Pieter Withoos were based on a much earlier picture by Roelant Savery of a whitish specimen of Mauritius dodo, painted in Prague around 1611. This was the only dodo Savery painted in Prague and the only dodo he painted that was white. The specimen was in the collection of the Habsburg emperor Rudolf II – Savery was employed by the emperor to paint his specimens – and it is also mentioned in the collection inventory c. 1607-1611 kept by curator Daniel Fröschl. All Savery's later dodo images are grey and the white bird may have been collected on Mauritius for its unusual colouration.

There are also geological reasons why a dodo never reached volcanic Réunion Island, as Mauritius is much older and dodos, evolving in Mauritius, would have been already flightless before Réunion emerged and hence could not have colonised in any case. No contemporary pictures are known of the Réunion solitaire and no specimens were brought to Europe alive or dead. Abbe Carré's attempt to bring two solitaires alive to France in 1667 resulted in their rapid death aboard ship, the birds having refused to eat or drink. The solitaire became extinct sometime between 1710-15.

On conclusion, the Chairman presented to Mrs "Effie" Warr a framed painting of the "Solitaire" (Fig. 1), in grateful appreciation of her continuing work at Tring, on behalf of the Club, and especially

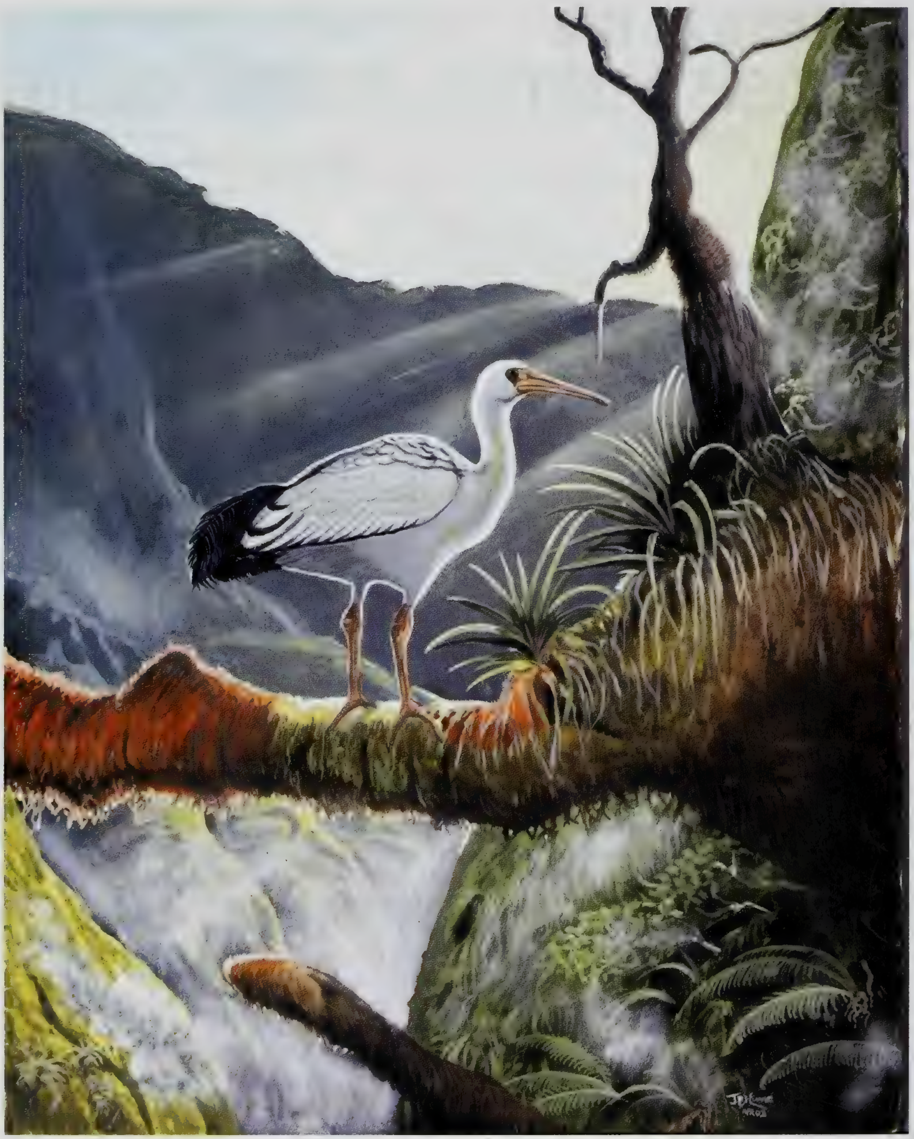
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Figure 1. Réunion solitaire. Reconstruction by Julian Pender Hume

for the magnificent help in the recent major project to sell and distribute back-numbers of the Bulletin of the British Ornithologists' Club.

Frank Steinheimer, former bird curator of The Natural History Museum, Tring, spoke on '***The historical bird collection at Berlin Museum'.*** Berlin Museum has a very vivid history. Soon after the museum's foundation in 1810 it had an early prosperity when receiving major collections from the Prussian Royal Chamber of Arts and associated aristocrats, including the birds collected and described by Simon Peter Pallas (1741-1811). Extraordinary and unique among antique bird collections is the fact that both the original 18th century Russian field labels as well as Pallas's hand-written remarks have survived attached to some of the specimens. In 1819, the then director Martin Hinrich Carl Lichtenstein (1780-1857) went to the London auction of William Bullock's collection, securing several important and rare specimens of early British explorations such as James Cook's circumnavigations (1768-1780) and Capt. Dugald Carmichael's voyage to Tristan da Cunha (1816-17). In the latter collection one can find the unique specimen of *Crithagra* (*Serinus*) *insularis* Cabanis 1873 (arguably co-specific to *Serinus flaviventris* and *S. mozambicus*, respectively).

Berlin's share of Bullock's collection includes fine specimens of Red Grouse, Hooded Merganser, Hammerkop and a specimen of the Hawaiian Ou *Psittirostra psittacea* (Gmelin, 1789) - a Cook bird not known to science until Frank's re-discovery, though Erwin Stresemann (1889-1972) had already commented on its label. The Ou-bird derives from the third voyage of James Cook (1728-1779) and had been collected between 17 January and 14 February 1779, the day when Cook was killed, at Kealakekua Bay, Hawaiian Islands. Other specimens illustrated were a Blue-spotted Wood-Dove of Wilhelm Peter Eduard Simon Rüppell (1794-1884) and a White-breasted Kingfisher of the famous collection of the French Georges Cuvier (1769-1832).

Several publications erroneously quote a total loss of Berlin's entire historical display collection of mounted birds during WWII. The truth is that one wing of the museum still remains as a war ruin. One of the bird halls, housing most of the mounted passerines, suffered major damage when an explosive shell destroyed all glass cases, physically damaging many specimens, but most of the specimens were rescued. In co-operation with Jürgen Fiebig, Frank has at last now commenced sorting this bulk of mixed-up specimens to family levels again, proving that only a few bird families, in particular the mounted tits, long-tailed tits, penduline tits, tree creepers, wall creepers and nuthatches, seem to have perished. As an excellent example of the importance, as well as the age, of these mounted birds, but also of the extent of damage caused during WWII, he showed a 230-year-old Long-tailed Rosefinch *Uragus sibiricus* (Pallas, 1773) of Pallas, which has been reduced to a foot, some wires and one wing.

David Fisher, talked on **'*Caribbean Crows*' -** reporting on a trip he had made to the Greater Antilles in the spring of 2002. He had tried to record the vocalizations of as many endemic species as possible. He found the endemic crows surprisingly interesting, and he played to the club his recordings of four species: Palm Crow *Corvus palmarum minutus* from Cuba, Jamaican Crow *Corvus jamaicensis* from Jamaica, White-necked Crow *Corvus leucognaphalus* from Hispaniola, and Cuban Crow *Corvus nasicus* from Cuba. He explained that the Palm Crow has simple vocalizations and that Derek Goodwin (in *Crows of the World*. 1976.) suggested that it is a recent colonist from North America. The vocalizations are described as being similar to Fish Crow *Corvus ossifragus*, a species that occurs in nearby Florida. The other three species all have more complex vocalizations, and Goodwin suggested they are part of an earlier colonisation, possibly from a raven-like ancestor. David's recordings of Cuban Crow were the most complex vocalizations of all, and surprisingly unlike a crow.

Jo Cooper of the Bird Group, The Natural History Museum, at Tring, spoke on **'*A right royal mix-up: the describing of the Emperor Penguin*'**. In 1843, His Majesty's Ships *Erebus* and *Terror* under the overall command of Sir James Clark Ross returned from a four-year Antarctic voyage, having become the first expedition intentionally to enter the Antarctic pack ice. Amongst the extensive collection of bird specimens brought back by the voyagers were a number of skins and skeletons of a substantial and strikingly marked penguin. After examining these specimens, G. R. Gray published a short note on this new species in 1844, recording the characteristics distinguishing it from the King Penguin, illustrations of which had appeared from at least 1768 onwards. Gray named the new taxon *Aptenodytes forsteri* – the Emperor Penguin.

If that had been all that he had written, all would have been well, but Gray managed to throw in a complication that plunged *Aptenodytes* taxonomy into confusion and was still exercising minds well into the 1900s. He wrote that he considered that the species had already been discovered, but had been confused with the King Penguin – to the extent that the author credited with naming the King Penguin, J F Miller in 1778, had actually illustrated an Emperor Penguin! With this in mind, he recommended suppression of the name *Aptenodytes patagonica* and suggested *A. pennantii* to replace it. In fact, Miller's bird *was* a King Penguin, but as many of the early pictures of this species were simply copies of someone else's figure their accuracy sometimes wandered. Nevertheless, Miller's illustration was clearly based on a 1775 painting of a King Penguin on South Georgia, made by Georg Forster during Cook's Second Voyage. Writing in the '*Catalogue of Birds in the British Museum*' in 1898, Ogilvie-Grant delivered a definitive (though later overlooked) clarification on the matter: 'The fact is that the 'Emperor' Penguin was probably unknown, certainly not described or figured, till Gray characterized it in 1844, and all the descriptions of the earlier writers refer to the King Penguin. Under these circumstances the name *Aptenodytes patagonica* must stand.'

There is only one small detail concerning the Emperor Penguin's naming that is still outstanding – Gray failed to identify a valid holotype, though happily we do know which specimens he would have used for the description. Investigations are under way at the Bird Group, and the correct recommendations will be made in due course.

Tony Statham gave a brief a slide-show entitled ***"The Good, The Bad and The Ugly – opportunities through the camera lens***" as a sample of photographs taken during bird-watching trips from Johannesburg during the 1970s when he lived in South Africa. Most were taken from a car window, one from a hide in a nature reserve and one from his sitting-room window of a flat in the suburbs of Johannesburg. These were opportunistic "snap-shots", with little or no preparation before the shutter fell and the selection of 26 bird slides captured both ordinary and common species as well as those seldom seen or rarely photographed in South Africa.

The first of a male Cape Sparrow was one of the first bird photographs he had taken, and despite being on the balcony of his flat, it won a junior prize at the Johannesburg camera club. Subsequent slides showed examples of the heron family, waterfowl and some waders. Particular favourites included a true "snap-shot" of an African Rail and a view of the Pearl-spotted Owlet (South Africa's smallest owl) in broad daylight.

Examples from the bush-veldt included a Rufous-naped Lark, a White-browed Robin and both Blue and Black-cheeked Waxbills; lastly, a Cuckoo Finch (subject of a detailed paper in *Bull. B.O.C.* 123: 113-125*)*. This was another "snap-shot" of what appeared to be a male on a fence adjacent to the road and for the speaker a lifetime species sighting that time.

The final two slides, classified as "Ugly", were spectacular examples of large and colourful "grass-hoppers"; these were not identified but are probably members of the family Acrididae, sub-family Locustinae.

Finally, **Ben Fisher** gave a fascinating presentation entitled **'*A collection of ploceus Weaver Bird nests*'** illustrated with a selection from his own *Ploceus* weaver collection, comprising some 39 species.

Ben stressed the remarkable variation in this genus, both of nests and birds, and began by comparing the typical suspended nest of the ubiquitous Village Weaver *P. cucullatus,* with that of the rare Bar-winged Weaver *P. angolensis,* beautifully woven of usnia lichen and fixed under a branch. The amazingly fine weaving by the Grosbeak Weaver *Amblyospiza albitrons* (an allied genus) whose enormous bill contradicts any rule that the finest weave goes with the finest bill.

While it is typically true that nest size is related to size of the bird - he illustrated the very small nest of the Little Weaver *P. luteolus* - the three common Indian weavers, of which a specimen was shown of the Black-throated Weaver *P. benghalensis,* have nest-chambers at least twice the size of the similar sized East African weavers. He suggested this may be due to more extreme climates and more predators, but then again the entrance tube of Streaked Weaver *P. manyar,* which enjoys a similar habitat to *P. benghalensis,* has a very short tube, whereas the latter example had a length of 33 cm. Finally, a specimen of the Sao Tome Weaver *P. sanctithomae* was shown to have a second entrance to the nest chamber, as well as the usual tube. In the past, this was thought to indicate "communal" nesting, but dissection of an old specimen at the meeting showed this not to be so. This raised the question as to whether this bird really should be in the genus *Ploceus*.

The Chairman thanked the speaker for this unusual presentation, and suggested that some Members may wish to visit this remarkable collection, at his home in Essex.

The 917th meeting of the Club was held Tuesday 24 June 2003, in the Sherfield Building Annexe, Imperial College. 22 Members and 6 guests were present.

Members attending were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, I.R. BISHOP, D.R. CALDER, Cdr M.B. CASEMENT RN, D.J. FISHER, F.M. GAUNTLETT, D. GRIFFIN, C.A.R. HELM, J.P. HUME, G.P. JACKSON, S.W. LOWE, D.J. MONTIER, Mrs M.N. MULLER, Dr D.E. POMEROY, Dr. R.P. PRŶS-JONES, Dr P.W.G. SALAMAN, S.A.H. STATHAM, C.W.R. STOREY, R.D.E. STOTT, N.H.F. STONE, and Cdr. F.S. WARD, R.N.

Guests attending were: Ms G. BONHAM, Dr. B.M. ROGERS, N. CLEERE (*Speaker*), Mrs M.H. GAUNTLETT, Mrs M. MONTIER, and Mrs S. STONE.

After dinner, Nigel Cleere gave a fascinating illustrated talk entitled "*Goatsuckers, Frogmouths and Oilbirds*". The following is a brief synopsis:

Five rather different families of nocturnal birds have traditionally been grouped together by taxonomists and are often placed within their own order, the Caprimulgiformes. The Oilbird *Steatornis caripensis* is an unique Neotropical species that roosts and breeds in caves and crevices, inside which it emits a series of echo-locating 'clicks' to move around in the darkness. It leaves the caves at night to forage for the fruits of mainly laurels and palms, which it probably locates by smell and sight. It is a large bird with clawed feet and a large, strong bill and appears to have very little in common with the smaller, insectivorous nightjars. Proposals are now being put forward that the Oilbird is possibly not a Caprimulgiform at all, and recent morphological studies suggest that it might actually share a common ancestor with Trogons.

Another family, the owlet-nightjars, contains 8 to 10 species, most of which are found only in New Guinea, although one species occurs in Australia and another is found in the Moluccas. As with the Oilbird, owlet-nightjars also differ in morphology and biology when compared with the nightjars. Recent molecular and morphological studies now reveal that they are actually related to swifts and hummingbirds and should no longer be considered Caprimulgiformes.

Frogmouths are also considered to be Caprimulgiformes, although no taxonomic studies have been undertaken recently to establish their true affinities. There are two distinct genera, the Asian *Batrachostomus* frogmouths and the Australasian *Podargus* frogmouths, which are either placed in one family, Podargidae, or in two with the Asian species in Batrachostomidae. The two genera differ significantly in size, sexual dimorphism, breeding biology and vocalizations. One new and interesting discovery within the *Podargus* frogmouths concerns the taxon that occurs on the Solomon Islands. Until now, this frogmouth has been considered to be a subspecies of the Ocellated Frogmouth *Podargus ocellatus*, which also occurs in New Guinea and Australia. However, recent morphological, molecular and vocal studies reveal that not only is this bird a full species, but also that it belongs in its own, as yet unnamed, genus. The results of these new studies are to be published in due course.

The seven species of potoo are all grouped in the family Nyctibiidae. Found only in the Neotropics, they are nocturnal, arboreal birds and poorly-studied in the field. Despite this, genetic studies have been carried out and the results show that they are indeed Caprimulgiformes, being a sister taxon to the Caprimulgidae.

The most numerous and widespread group of Caprimulgiformes are the Caprimulgidae, a family that includes nighthawks, poorwills, pauraques and nightjars. They are found in most parts of the world, but are absent from the polar regions, true deserts and New Zealand. Although at first glance nightjars appear to be rather primitive looking birds, they are in fact highly adapted, nocturnal insectivores. Many studies have already been carried out on these birds, which can be summarised as follows :-

1. Nightjars hunt by sight and have large eyes that are situated laterally on the head to offer a good field of view. They also have a reflective surface at the back of the eye called a tapetum, which increases the detection rate of light entering the eye and greatly improves their night vision. It is the tapetum reflecting back light, which shows as the distinctive eye-shine in these birds.

2. Nightjars have small bills but a very large gape and can open their mouths both vertically and horizontally. They also have highly sensitive palates, and these may all be adaptations for nocturnal, aerial feeding. Many nightjars also have elongated rictal bristles around the gape, which may serve as an aid during foraging or may simply protect the eyes. To be able to catch flying insects, nightjars themselves must be accomplished flyers. They achieve this by having a very large wing area in proportion to their mass.

3. Other adaptations help them survive in hostile environments. In high temperatures, a roosting or nesting nightjar can regulate its body temperature by opening its mouth and gular fluttering. Studies of one species, the Lesser Nighthawk *Chordeiles acutipennis,* show that it can also maintain a brain temperature of about 1.28ºC below that of its body temperature. It has a highly vascularized area in the temples, which allows a heat exchange between warm blood flowing into the brain and cooler blood flowing from it. In cold temperatures, some species can lower their body temperature and reduce their metabolism, to enable them to survive periods of poor feeding conditions.

Despite the wealth of information available on some species of nightjar, it is clear that we still have much to learn about these fascinating birds.

The international importance of bird collections in Italian museums

by Carlo G.Violani & Fausto Barbagli

[The following paper was invited by the organisers of the symposium *Why Museums Matter: Avian Archives in an Age of Extinction* (see *Bull. BOC* 123A, March 2003), and duly read before the meeting in November 1999. However, in the final stages of editing it was inadvertently omitted from the proceedings by the senior editor, and is published here with sincere apologies to the authors for this mistake.]

Summary

Five major international collections of birds exist in Italy (provenance of main material in brackets): (1) Museo Civico di Storia Naturale 'G. Doria', Genoa (Burma, Borneo, Sumatra including West Sumatran islands, Sulawesi, Aru and Kei Islands, and New Guinea; Cape Verdes, Portuguese Guinea, Gulf of Guinea islands, Cameroon, Gabon, Equatorial Guinea, Ethiopia, Eritrea, and other parts of East Africa; Colombia, Ecuador, Argentina and Antarctica); (2) Museo Regionale di Scienze Naturali di Torino, Turin (Hawaii, the *Magenta* voyage, Near East, Darién, Ecuador, Paraguay, Mato Grosso and Tucumán, the Bolivian Chaco and Argentina, Ruwenzori Mountains and North Pole); (3) Museo Civico di Storia Naturale, Milan (various types and rarities); (4) Museo Zoologico 'La Specola', Florence (British Guyana, Somalia, Korea, Japan, Australia and New Zealand); and (5) Museo Civico di Zoologia, Rome (South America, Borneo and New Guinea). Smaller museums contribute little internationally. Citation rates and museum staff output in the 1990s indicate a strong need for more specialist staff in Italy.

Introduction

With some notable exceptions, little is known outside of Italy concerning the extent and type of ornithological materials contained in museums in that country. Nevertheless, in Italy there are at least five museums with over 15,000 bird specimens from all parts of the world. Moreover, there are about twenty museums of medium importance which include collections of some thousands of specimens (e.g. at Ozzano Emilia, Terrasini, Pavia, Forlì and Randazzo). To these we must add many minor museums containing bird collections mainly of local importance. Finally, there are a number of bird collections, some formerly owned by ornithologists, that are not placed in a proper museum, but preserved in public or private institutions, religious orders, colleges, schools, town halls, etc. Several museums in Italy can boast a rather ancient origin, among them those in Florence and Pisa with the Medici and Hapsburg-Lorraine collections jointly. Pavia and Reggio Emilia museums house specimens gathered by the famous biologist Lazzaro Spallanzani (1729–1799). Bologna University has still some remaining material once belonging to the Aldrovandian and Cospian museums (sixteenth and seventeenth centuries) and to the Abbé Camillo Ranzani (1775–1841), while Parma treasures animals prepared and sealed in glass flasks by Father Jean Baptiste Fourcault, 'Religieux minime de Bourgogne et

Ornithologiste de S.A.R. l'Infant Duc de Parme', between 1765 and 1775 (Strobel 1884; Fig. 1).

However, most of the ornithological material collected within Italy dates back to the end of the nineteenth and start of the twentieth century, when Professor Enrico Hillyer Giglioli of Florence promoted the 'Ornithological Inquiry', involving a network of several collaborators who set up collections of regional interest with local rarities (Barbagli & Violani 1996a,b). Some of these collections now constitute the original nucleus of smaller provincial museums such as the ones in San Gimignano (Paulucci Collection), Cremona (Ferragni Collection) and Fucecchio (Lensi Collection). Similarly, the majority of the exotic bird collections in Italy derive from the main period of territorial exploration and colonial expansion (*c.*1865–1935).

The major museums

Genoa

Among the main institutions the Museo Civico di Storia Naturale 'G. Doria' of Genoa, founded by Marquis Giacomo Doria in 1866, started with collections gathered in Borneo by G. Doria himself in 1865 and by Odoardo Beccari in 1865–1868; further important material came from the northern part and southern coast of New Guinea (by Luigi M. D'Albertis and O. Beccari, 1871–1878); from Sumatra, the Aru and Kei Islands, Moluccas and Sulawesi (by O. Beccari); from the Moluccas and Sangihe (by Anton A. Brujin) and from the southern part of New Guinea (by Lamberto Loria, 1888–1897). Leonardo Fea collected in Burma in the period 1885–1889, while Elio Modigliani visited interior Sumatra and the West Sumatran islands of Nias, Mentawai and Engano, bringing back rich series of birds. In Africa, Orazio Antinori and O. Beccari collected for Genoa Museum in the Bogos Country (Eritrea); the former also explored Equatorial Africa in the years 1875–1878, and Shoa until his death in 1882, and his exploration there was continued by the army physician Vincenzo

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Captions to plate on page 14:

Figure 1. Specimens in glass flasks prepared by J.B. Fourcault, ca 1765-1775. Museo di Zoologia, Università di Parma (photo P. Morris).

Figure 2. Hawaiian birds, from the auction of the Bullock Museum (1819), ex Captain Cook's expedition. Museo Regionale di Scienze Naturali, Torino (photo P. Morris).

Figure 3. Skeleton of *Dromaius ater* Vieillot, 1817, from the "Expedition Baudin aux Terres Australes", King Island (1802). Museo Zoologico "La Specola", Sezione del Museo di Storia Naturale dell'Università di Firenze (photo L. Perugi).

Figure 4. Sardinian specimen of Marbled Teal *Marmaronetta angustirostris* (Ménétries, 1832) from the Durazzo collection. A plate depicting this specimen was published by C.L. Bonaparte in 1841. Museo Zoologico "La Specola", Sezione del Museo di Storia Naturale dell'Università di Firenze (photo S. Bambi).

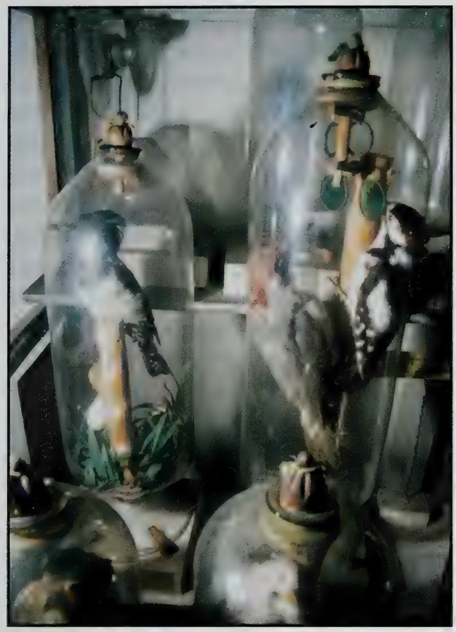

Figure 1

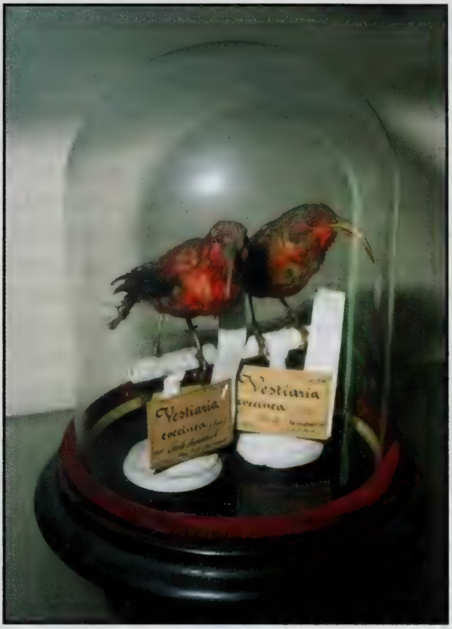
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Figure 2

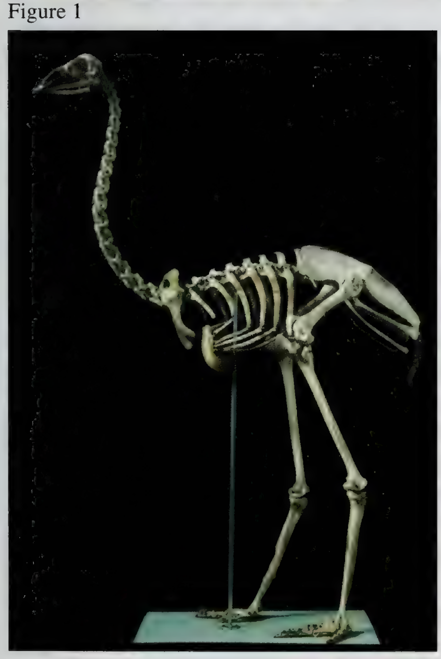

Figure 3

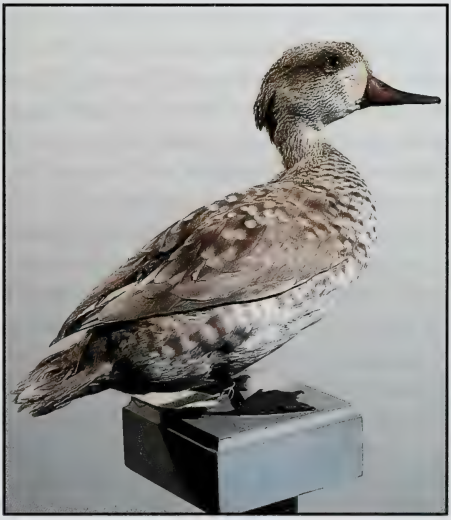

Figure 4

Ragazzi, who sent numerous birds and other animals to the museum. Captain Vittorio Bottego collected many animals but only a few birds in Ethiopia in 1895–1897, while Carlo Citerni, Saverio Patrizi, Raimondo Franchetti and don Eugenio dei Principi Ruspoli obtained rich material from various parts of East Africa. In the period 1897–1903, L. Fea collected in the Cape Verde Islands, Portuguese Guinea and the Gulf of Guinea Islands, as well as in Cameroon and Gabon. South America was also visited by Italians, enriching the ornithological collection: the Italian expedition to Argentina and Antarctica from 1883 to 1884, guided by Giacomo Bove, produced a rich number of bird specimens for the museum; ornithological and entomological material was sent from Ecuador by V. Carbone and C. Figini, and from Colombia by Apollinaire Maire. Also deserving of mention is a valuable series of hummingbirds formed over several years thanks to many different donors, including Italian missionaries to South America (Violani *et al.* 1979).

Turin

Turin University Museum was officially founded in 1739 by order of the King Carlo Emanuele III of Savoy. In the mid-eighteenth century the King bought some private collections and sent Vitaliano Donati, professor of botany, to the Near East to collect natural material to enrich the museum. At about the same period the Royal Society of Turin (later the Accademia delle Scienze di Torino) established a cabinet of natural history with the gifts received from several associates. Neither museum was outstanding in terms of scientific content until, during the French domination, the Emperor Napoleon Bonaparte unified the two institutions as the Museum of Natural History under the control of Turin University, situated in the Accademia's palace. Under the subsequent direction of Franco Andrea Bonelli (incumbent 1811–1830), Giuseppe Gené (incumbent 1831–1848), Filippo De Filippi (incumbent 1848–1867) and Michele Lessona (incumbent 1867–1894), the Turin Museum grew into a major national scientific centre (Passerin d'Entrèves 1997). During his directorship Bonelli travelled to London where he participated in the auction of the Bullock Museum's material, acquiring, among other specimens, some birds of the 'Sandwich Islands' (Hawaii) from Captain Cook's expedition to the South Seas (Fig. 2). Turin reached its ornithological peak owing to its vice-director Count Tommaso Salvadori, who kept his position for about fifty years until his retirement in 1921 (Passerin d'Entrèves *et al.* 1986). Salvadori was well versed in the global avifauna and described bird series sent to him for study mainly from Genoa Museum (including specimens taken by Beccari, D'Albertis, Loria, Fea, etc.) as well as those resulting from expeditions sponsored by Turin Museum itself, such as the round-the-world voyage of the *Magenta* (1865–1869) and the missions of Enrico Festa to the Near East (1893), Darién (1896) and Ecuador (1898), of Alfredo Borelli to Paraguay, Mato Grosso and Tucumán (1895) and to the Bolivian Chaco and Argentina (1897), and of the Duke of Abruzzi to the Ruwenzori Mountains (1906) and the North Pole (1899–1900).

Turin holds a large number of birds and several types of Papuan, Moluccan and Indonesian forms exchanged from Genoa in recognition of Salvadori's skills in identification. His particular ability with specific groups (parrots, pigeons, ratites, ducks) earned him the distinction of being commissioned to write three of the famously immense volumes of the *Catalogue of birds in the British Museum* (1892, 1893, 1895). After his death in 1923, however, ornithological activity in Turin decreased rapidly and no further important avian material reached the museum. During the Second World War, part of the collection was severely damaged by a bomb which destroyed a specimen of the extinct Réunion Crested Starling *Fregilupus varius* (Violani *et al.* 1999). At the start of the 1980s all the collections of Turin University were transferred to the newly founded Museo Regionale di Scienze Naturali di Torino.

Milan

The Museo Civico di Storia Naturale of Milan was founded in 1838, incorporating the two private collections of Giorgio Jan and Giuseppe De Cristoforis. At first the bird section was not particularly outstanding, but it was soon increased by specimens brought back by Gaetano Osculati's exploration of Rio Napo in Ecuador (Cornalia 1849) and by other birds acquired from natural history dealers. De Filippi (1847), then assistant director of the museum before becoming professor at Turin, listed 1,443 specimens pertaining to at least 1,365 taxa, including some which were supposedly undescribed. In 1882 the sons of Count Ercole Turati presented the famous bird collection of their deceased father to the museum, thereby enormously increasing the ornithological section which, up to that moment, numbered only 3,766 specimens. The Turati Collection was celebrated among the European private museums as it included important material previously owned by Alfred Malherbe (Picidae), the Verreaux brothers (Trochilidae), Daniel G. Elliot (Paradiseidae) and duplicates received in exchange from Turin, Genoa and Vienna. It numbered 20,661 skin specimens, plus 700 skeletons and 3,000 eggs (Moltoni 1931). A bombing raid in August 1943 destroyed the majority of the museum's collections, including a large proportion of Turati's birds. Some invaluable specimens were fortunately undamaged, including a Great Auk *Pinguinus impennis*, a Hawaii Mamo *Drepanis pacifica*, a pair each of Ivory-billed *Campephilus principalis* and Imperial Woodpeckers *C. imperialis*, several Huias *Heteralocha acutirostris* and about 100 types (Violani *et al.* 1984). Soon after the war, thanks to the ceaseless activity of Edgardo Moltoni (director, 1951–1964), the museum was reconstructed and new bird collections assembled. Moltoni was also responsible for the description of eight African taxa, including Stresemann's Bush-crow *Zavattariornis stresemanni*, the holotype of which is still in the museum. At present the collection of study skins and mounted birds numbers about 37,000 specimens.

Florence

The Museo Zoologico 'La Specola' of Florence University was the first natural history museum to be opened to the public, in 1775 (Berzi *et al.* 1978, 1980). It was founded that year by the Grand Duke of Tuscany Pietro Leopoldo of Lorraine, the second son of Maria Theresa Empress of Austria. It still includes a few stuffed birds dating back to the end of the eighteenth century. Most of the imposing Italian collection is due to the activity of Enrico Hillyer Giglioli (in the years 1869–1909). Other local collections by C. Ridolfi, G. Arrighi Griffoli and W. Della Gherardesca were subsequently donated. Many non-European birds in the museum date back from the first half of the nineteenth century; others were obtained by the Corvette '*Vettor Pisani*' expedition to Somalia (1879), Korea and Japan, by Professor Nello Beccari's exploration to British Guyana in 1931–1932, and by exchanges with Australian and New Zealand institutions in the late nineteenth century (museums of Perth, Sydney, Christchurch and Auckland, and the Buller Collection). Among the rarities there is an almost complete skeleton of the extinct King Island Emu *Dromaius ater* from the "Expedition Baudin aux Terres Australes" received from Paris Museum, presumably through G. Cuvier (Fig. 3); a mounted specimen of the extinct Norfolk Island Kaka *Nestor productus*; three types described by Prince Carlo Luciano Bonaparte (*Emberiza Durazzii*, *Ramphocelus Passerinii* and *Agrilorhinus sittaceus*), as well as a Marbled Teal *Marmaronetta angustirostris* (Fig. 4) and a Blue-cheeked Bee-eater *Merops persicus*, which served as models for two of the plates in the *Iconografia della Fauna Italica* (Bonaparte 1832–1841).

Rome

The ornithological collection of the Museo Civico di Zoologia in Rome started with specimens originating from the zoological cabinet of the Archiginnasio Pontificio (the Papal University) and notably increased under the reign of Pope Pius IX; indeed, some specimens of South American birds were given to the Archiginnasio by this pope, as Canon Giovanni Maria Mastai Ferretti, after his return from an apostolic mission to Chile in 1825 (a Sooty Albatross *Phoebetria fusca* from the same donor is also in Turin Museum). Subsequently various donations and the results of explorations in distant regions were added to the original nucleus, notable among them being the Arrigoni degli Oddi collection of Italian and Palearctic birds, the Prince Francesco Chigi collection of Latium birds, King Vittorio Emanuele III's personal collection (including a fine specimen of a Great Auk), material from the South American voyages of De Amezaga and Gallardo, King Umberto I of Savoy's Bornean birds, and a part of L. Loria's collection from New Guinea published by T. Salvadori.

Reflections

This diaspora of material in so many institutions is due to the lack of a national museum in Italy, in contrast to the situation in England, France, the Netherlands and

United States. In a country as politically divided as Italy was until 1860, the idea of a national museum arose very late, only after the unification of the different states. Several ornithologists campaigned for such an institution, to no avail: Salvadori proposed it for Milan, thanks to the Turati donation; Giglioli advocated Florence, Alessandro Ghigi and Arrigoni degli Oddi suggested Rome. Thus the strong polemic spirit of the Italians and a lack of political will resulted in the failure of this idea. (At the start of 1980s a new proposal was made for a national museum of natural history in Florence, but again it came to nothing.) Moreover, after the first three decades of the twentieth century, following the disappearance of Giglioli, Salvadori and Arrigoni degli Oddi from the scene, Italian ornithology and museology practically ceased, and a long period of stagnation began. For half a century ornithology in Italy was entrusted mainly to the care of Edgardo Moltoni, involved in the direction and publication of the *Rivista Italiana di Ornitologia*, as well as in the reconstruction of Milan Museum and its collections.

The great number of museum institutions of varying importance inspired the creation of many private collections, more or less equally valuable, with many species on exhibit, each represented by a single specimen or a few of them in different ages or plumages, but not by larger, scientifically more valuable series of individuals. Generally speaking, avifaunas outside Italy are most commonly represented by isolated specimens or groups whose main value is for public exhibition or educational purposes. There are also varyingly large series representing different plumages or local variations. This taxonomically and geographically patchy distribution of material makes its use by the scientist, foreign as well as Italian, rather difficult. This unpromising situation is compounded by the fact that museums are frequently run by a single curator (in smaller museums) or a group of staff smaller than the number of sections to be looked after.

The increasing interest for museology which started in Italy in the 1980s has produced a new appreciation of old material in need of restoration and historical study, and some catalogues of Italian collections have recently been published (Table 1). However, a computerised information system of scientific holdings is still far from being complete, and the exchange of data still meets many difficulties, even in larger museums.

In order to clarify the present situation and the availability of collections to researchers, we conducted a statistical survey, searching papers which appeared in the main bird periodicals between 1989 and 1998 (journals selected were: *Alauda, Annali del Museo Civico di Storia Naturale "G. Doria" Genova, Atti della Società Italiana di Scienze Naturali, Auk, Avocetta, Bollettino del Museo Regionale di Scienze Naturali Torino, Bulletin of the British Ornithologists' Club, Emu, Forktail, Ibis, Notornis, Proceedings of Italian Ornithological Conferences, Quaderni del Museo di Storia Naturale Livorno* and *Rivista Italiana di Ornitologia*). The output of museum staff was evaluated on the basis of ornithological papers published by authors located in museums, and dividing the ten-year period into two equal subperiods to determine the trend (Fig.5). We also checked the contribution of information obtained from

TABLE 1

Published catalogues of Italian ornithological collections

Florence Museum	Trogoniformes, Extinct & Rare
Rome Museum	Arrigoni degli Oddi Collection
Turin Museum	All birds
Genoa Museum	Types, Extinct & Rare
Milan Museum	Extinct & Rare, Sterna, Fossil
Terrasini Museum	Types, Trischitta Collection
Randazzo Museum	All birds
Forlì Museum	All birds
Udine Museum	All birds, Eggs
Venice Museum	Bisacco-Palazzi Collection
Livorno Museum	All birds
Ravenna Museum	All birds
Morbegno Museum	All birds
Trieste Museum	All birds
Fermo (Salvadori Collection)	All birds
Varenna (Scannagatta Collection)	All birds
San Gimignano (Paulucci Collection)	All birds
Chievo (Villa Brea Collection)	All birds
Quiesa (Gragnani-Rontani Collection)	All birds
Fucecchio (Lenzi Collection)	All birds
Modena (Fiori Collection)	All birds

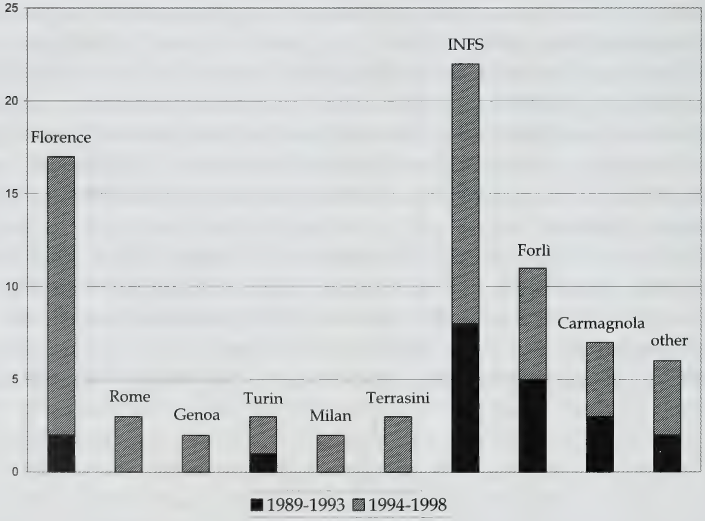

Figure 5. Number of ornithological publications by staff of Italian museums over two time periods (see text for explanation).

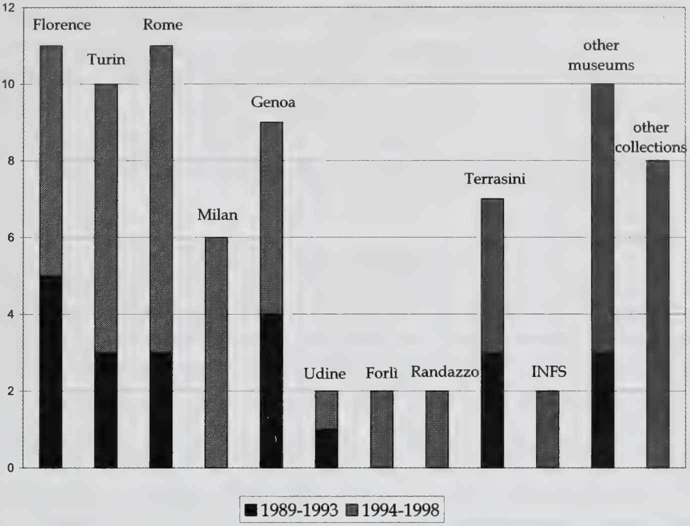

Figure 6. Number of publications quoting bird material in Italian Museums over two time periods (see text for explanation).

Italian museums in the main periodical bird literature in Italy and abroad, deriving it from their acknowledgments and context.

We counted the number of citations involving bird material in each Italian museum, and allocated them by subperiod in order to search for a trend (Fig. 6). It is interesting to see that the higher scores are shown by Florence, Rome, Turin, Genoa, Terrasini and Milan museums; in the particular cases of Florence, Rome and Terrasini, however, their citations refer mainly to Italian material studied by Italian authors, which is easily explained by the fact that almost all Italian ornithologists only study Italian birds! Turin, Genoa and Milan museums have, by contrast, citations by foreign authors almost always referring to type material or specimens of extinct taxa kept in their care.

Avian type specimens are rather well represented in Italy. Genoa holds about 250, Turin has more than 200, Milan about 100, and other museums, including Rome, Florence, Pisa, Terrasini, Randazzo, Bologna and Forlì, possess altogether 50–70 types between them. Turin is particularly famous among foreign ornithologists for holding the holotype of the Magenta Petrel *Pterodroma magentae* described by Giglioli and Salvadori in 1868, a specimen about which many papers were produced, since it remained unique for more than 120 years.

In terms of scientific ornithological research the general view is multifarious (see Fig. 6), but few are the museums whose staff publish in ornithology (Fig. 5). The most active one is the Istituto Nazionale per la Fauna Selvatica (INFS) of Ozzano Emilia near Bologna, a national research institute which provides advice on wildlife management and shooting permits; it has its own museum collection originated partly by A. Ghigi and by A. Toschi. It has increased recently through the collection of 'casualties'. This explains its strong publications record. The only museums which have published more than five papers in the period under review are Florence (mainly for the years 1994–1998), Forlì and Carmagnola. This indicates the desirability for more specialist staff members in museums with bird collections in Italy, in order to maintain a fruitful connection between museum collections and ornithological research.

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The oldest egg in the Natural History Museum

by N. J. Collar

Green & Scharlemann (2003) refer to the oldest dated egg in the Natural History Museum, Tring, U.K., as that of a Great Bustard *Otis tarda* from 1801, and cite me as the authority for this information. Their original typescript had indicated that the oldest dated egg was that of a Northern Gannet *Sula bassana* from 1807, for which they cited Walters (1993), but as their editor I pointed out to them that the bustard egg was older, and I readily altered the text when they expressed the wish to include this information. Unfortunately I confused the difference between the oldest egg and the oldest *dated* egg. The oldest *dated* egg is indeed the gannet's. The Great Bustard egg in question is merely inscribed "Wilts" and, because there is no date later than 1801 for a Wiltshire bustard clutch in the exhaustive treatment of the species by Smith (1887; see p.353), I have always deemed it reasonable to think that this egg was taken in that year or possibly earlier. However, its date remains a matter of probability rather than inscription, and the statement in Green & Scharlemann (2003) is therefore simply untrue. I apologise to the authors for misleading them, and especially to Michael Walters, whose courteous inquiry drew this matter to my attention, and whose many distinguished years of service in the egg collection at the Natural History Museum I managed to slight by this mistake.

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Additional distributional records from the central Hejaz, western Arabia – an addendum to Baldwin & Meadows (1988)

by Brian S. Meadows

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The Hejaz, which can be defined as the area (including the Red Sea coast) between the Gulf of Aqaba (28°N) and Taif (21°N), is one of the least explored regions of the Middle East. The central Hejaz, in particular, was virtually unknown ornithologically until 1979 when Peter J. Baldwin took up employment near Yanbu al-Bahr (23° 54-59'N, 38° 11-18'E), the site for a new industrial city. His observations within 75 km of the city, up to May 1987, together with the author's, who took up residence at Yanbu in 1984, were jointly published in Baldwin & Meadows (1988), hereafter referred to as B&M. PJB left Yanbu in early 1988 but BSM remained until 12 April 1994.

BSM continued ornithological observations in Yanbu al-Sinaiyah and its hinterland and this note documents additions to the check-list, which lists 288 species, in B&M (1988). It includes all new species (23) and distinctive subspecies (4) seen within a 75 km radius of Yanbu al-Sinaiyah by the author, plus records of species (18) where there were two or fewer previous observations. All species are discussed in relation to their status elsewhere in the Arabian Peninsula. In addition, data on several new breeding species were obtained over the same period and these records will appear in the forthcoming *Atlas of the breeding birds of Arabia.*

References in the text to Greater Arabia refer to the Arabian Peninsula (or Arabia), the Levant and Mesopotamia.

A follow-up visit to the area covered by B&M, specifically to evaluate the current status of some species listed in the species accounts section, was undertaken between 10-15 February 2003.

Site details

Background

In 1975 the Royal Commission for Jubail and Yanbu was established to oversee the development of two new industrial cities – Jubail on the Arabo-Persian Gulf and Yanbu adjacent to the Red Sea. The two new cities, which were both built from scratch at coastal desert locations, were conceived as a result of a policy decision by the Government of the Kingdom of Saudi Arabia to break away from its dependence on crude oil exports and to diversify its economy, particularly in the fields of petrochemical and metal industries. Trans-Arabian crude oil and gas pipelines were built to link the Eastern Province of Saudi Arabia to the Red Sea.

Yanbu al-Sinaiyah was established on the coastal plain (Tihama) approximately 15 km south of an existing port – Yanbu al-Bahr – and at the delta of the Wadi Farah. Wadi Farah has one of the widest dry estuaries along the Red Sea and is the main wadi draining the Jebel Radwa complex (see Fig. 1). Construction of the city, plus initial landscaping that included the importation and planting of mature palms, commenced in 1977 and by 1994 the city held a daytime population of around 25,000.

Habitat zones

A) Sea-coast

The coast is low-lying and fringed by coral reefs along much of its length, with one major area of mangroves *Avicennia marina,* plus intermittent saltflats. Inland, beyond the shoreline of the coastal zone, before any acacias of the coastal plain appear, halophytic vegetation occurs in some abundance. The halophytes are frequently associated with small sand dunes created around the nucleus of a salt-tolerant plant. To the south of Yanbu the entire shoreline is dominated by such small sand-dunes and a wide Tihama but to the north the coast is broken up by two sharms (large bays formed by the erosive power of short wadis arising from the adjacent Jebel Radwa range) and many raised beaches with low coral cliffs.

The major stand of mangroves borders 11 km of coastline and covers *c.* 800 ha, which is almost entirely within the boundary of the industrial city of Yanbu and is of importance - in particular - as a breeding site for several species of herons (Meadows 1986). The trees, which are all stunted due to the high salinity and relatively low nutrient content of the Red Sea, grow at the mouths of major deltaic branches of the Wadi Farah. It is the most extensive mangrove belt along the Red Sea north of the Tropic of Cancer and three sectors have been designated as Conservation Areas where development is prohibited (Evans 1994).

B) Tihama plain and piedmont zone

Between the foothills of the mountains and the shoreline there is a coastal plain (the Tihama) about 50 km wide. The plain is a hot hyperarid desert that is virtually free of ground vegetation save after an occasional period of winter rains. If the latter have been prolonged and plants have produced seed, spring migrants such as doves, larks and buntings can occur in relatively large flocks. Widely spaced acacias do occur and in local depressions patches of halophytes can be found well inland.

Cultivation is restricted to wadis in the foothills (piedmont zone), particularly along the Yanbu al-Nakl valley, where several villages with palm groves, fed from springs, and irrigated plots using artesian water occur. A dam across Wadi Farah, which collects winter rainfall for recharging groundwater, was completed in 1983. There are no permanent rivers. The rocky foothills are covered with widely spaced acacia bushes and a ground flora of annuals is present after winter rains.

C) Jebel Radwa

Like the rest of the eastern side of the Red Sea the flat coastline is paralleled by a steep escarpment representing the upturned edge of the Arabian Plateau, although at the latitude of Yanbu the escarpment is broken and is represented by a series of isolated, rather than continuous, mountain ranges that rise to only around 2,000 m. The hinterland at Yanbu is dominated by the Jebel Radwa range with at least three peaks reaching around 2,000 m and rising vertically from little above sea-level on the seaward side but more gently on the landward flank. A few permanent springs occur and there is some *Juniperus phoenicea* scrub as one approaches 2,000 m.

Climate

The area lies within middle zone of the Saharo-Sind desert belt. Temperatures are relatively warm in mid-winter (*c.* 15°C) and extremely hot (> 40°C) in summer on the Tihama. However, climate in the hinterland is modified by altitude. Frost and snow may occasionally occur in winter on the higher peaks of Jebel Radwa, albeit snow fell only during the 1992/3 winter during the period under review. Cylones from the Mediterranean bring scanty winter rainfall and occasional heavy rains during March-May, as, for example in 1993 (Meadows 1994a).

Yanbu's latitude is too far north to be significantly affected by the SW monsoon that brings rain from July to September to the southern Red Sea. However, the monsoons of the Indian Ocean do have a significant effect on the Red Sea wind system and thus directly affects sea water level that determines the extent of flooding of inter-tidal habitats and, in turn, the suitability of forming feeding grounds for waders (Meadows 1993a). In summer, the south-west monsoon generates a flow in a clockwise direction along the Somali and Arabian coasts towards the west coast of India. From May to September, north-northwesterly winds prevail along the whole of the Red Sea, helping its water to flow into the Gulf of Aden. In winter, the north-west monsoon generates current in the opposite direction so that, from November to March, there is a flow from the Gulf of Aden into the southern part of the Red Sea. At this time, the north-westerly winds reach no further south than 20°N, thus assisting still further the inflow of surface water into the Red Sea.

Development Phases

Over the 15 years (1979-1984) covered by B & M and this paper, the development of Yanbu al-Sinaiyah can be split into three phases, each with implications for bird-life.

The first phase involved massive earthmoving and dredging activities for the infrastructure of the port and adjacent city. Water was supplied by desalination barges and to a lesser extent from treated groundwater, and the first plant nurseries were established.

From an ornithological point of view the most important activity during the main construction period of the industrial city between 1979 and 1984 was the provision of temporary housing and resultant generation of wastewater plus extensive de-watering for laying foundations and underground infrastructure – both these activities (sewage generation and de-watering) formed artificial wetlands on a massive scale. Natural fresh-water wetlands in the central Hejaz are normally insignificant.

Sewage was dealt with either by the provision of several package mechanically-operated plants (based on activated sludge or rotating disc filters) that, however, generally produced poor quality effluents that were discharged either directly to the desert or on to coastal salt pans prior to eventually entering the Red Sea or, for some developments, such as the pioneer community village (Al Awaell), by algal stabilization lagoons. Algal lagoons created wetland habitat directly but one major discharge of the former type (a combination of cooling water, brine and sewage effluent) flowed on to a salt pan adjacent to mangrove Conservation Area # 2 that formed a vast area (*c.* 500 ha.) of shallow nutrient rich water with a depth normally between 1-30 cm and it attracted large numbers of wetland species, especially ducks, gulls and pipits. At this time (1981-4) a temporary breeding colony of Spoonbills *Platalea leucorodia* was established in adjacent mangroves. Dredging activities also created two small artificial islands that were rapidly colonized by terns.

1984-7 can be considered an intermediate period with the commissioning of permanent advanced wastewater treatment plants, which included tertiary treatment, enabling direct discharge to the Red Sea or re-use of water for irrigation. The majority of man-made wetlands disappeared during this period. However, extensive landscaping was commenced at this time, particularly within the community area, and Yanbu al-Sinaiyah was transformed into a garden city. Palm Doves *Streptopelia senegalensis* and Yellow-vented Bulbuls *Pycnonotus xanthopygos* – two species already breeding at an oasis in the hinterland – started nesting in 1983 and 1984 respectively while Black Bush Chats *Cercotrichas podobe*, a species that also breeds in the hinterland, first arrived in the city in 1986 and were breeding by 1993.

Between 1987 to 1994 landscaping in Yanbu al-Sinaiyah became fully mature – lawns became established, and many fruit trees and shrubs commenced flowering and fruiting (see references to Redwing *Turlus iliacus*, Pygmy Sunbird *Anthreptes metallicus* and Amethyst Starling *Cinnyricintus leucagantes*). Golden Orioles *Oriolus oriolus* nested during this period and other species suspected of breeding included Blackcap *Sylvia atricapilla,* Olivaceous Warbler *Hippolais pallida,* Spotted Flycatcher *Muscicapa striata* and Masked Shrike *Lanius nubicus.* Also, Pallid Swifts *Apus pallidus* had colonized tall buildings in both Yanbu al-Sinaiyah and Yanbu al-Bahr. Apart from the last and Olivaceous Warbler these are normally associated as summer breeding species in the more verdant Levant.

In the hinterland the dam constructed in 1983 resulted in a recharge of the local groundwater during this period; new wells were constructed with a corresponding commencement of agricultural development for horticultural crops. No large-scale commercial pivot sprinkler systems were developed (Jennings 1999) but new irrigated fields, which were developed by local farmers in the Yanbu al-Nakl valley, were created (probably responsible for first records of African Silverbill *Euodice cantans*).

The number of livestock also increased and three huge grain stores, attached to barley packing plants on the outskirts of Yanbu al-Bahr, were also a post-1987 development (see references to Spanish Sparrow *Passer hispaniolensis* and Trumpeter Finch *Bucanetes githagineus).* Although much of Yanbu Al-Bahr remained unsewered a *de-facto* sewage farm was created on the fringe of the town by the development of flooded canalized grass plots for treating cesspit effluents. Salt pans at Yanbu al-Bahr were still present in 1994 although commercial production had ceased three years earlier (the site had been reclaimed by 2003 when it was also noticed that the site was marked out for housing development).

Study Area

The recording area from a 75 km radius of Yanbu al-Sinaiyah was chosen because residents in the city could only travel within this distance without obtaining a travel authorization from the government. This restriction has now been lifted.

Coverage

The records listed in this paper were obtained mainly on an *ad-hoc* basis. A daily log of birds seen on walks within the landscaped community area of Yanbu al-Sinaiyah, which covered morning, midday and evening, was maintained, as well as regular visits – associated with employment duties - to industrial facilities, utilities and the three mangrove conservation areas, while Conservation Area # 1 was also normally visited daily after 1600 hours during peak periods of migration. Mist-netting at Conservation Area # 1 was undertaken monthly between April – December 1993 in connection with a population study of Mangrove Reed Warbler *Acrocephalus avicennia* (Meadows 1999). A 3 h coastal boat trip to inshore water on the seaward side of the fringing reef at the 20 m depth contour along the length of the industrial city was carried out weekly. The entire shoreline was surveyed annually, using a 4-wheel drive vehicle each May-June, to check on numbers of nesting Saunders' Little Tern *Sterna saundersi* and three surveys of islets, which were used by five other species of nesting terns, north of Yanbu al-Bahr were undertaken in 1993 (Meadows 1993a). During the winters of 1991/2 and 1992/3, wader counts were undertaken along the coastline of the recording area. Relatively small numbers of shorebirds confirmed earlier results (Meadows 1993a); the low nutrient input by any land-based runoff, compared to the Saudi Arabian sector of the Arabo-Persian Gulf, almost certainly being responsible.

All visits to the hinterland were carried out at weekends. However, compared to the period covered in B & M the number of visits into the hinterland did increase – particularly to the valley of Yanbu Al-Nakl. Apart from two nocturnal trips (specifically for purpose of locating owls) all visits were made during daylight hours. Access to the interior was mainly via local roads through the desert, mostly unpaved and along wadi systems (Fig. 1).

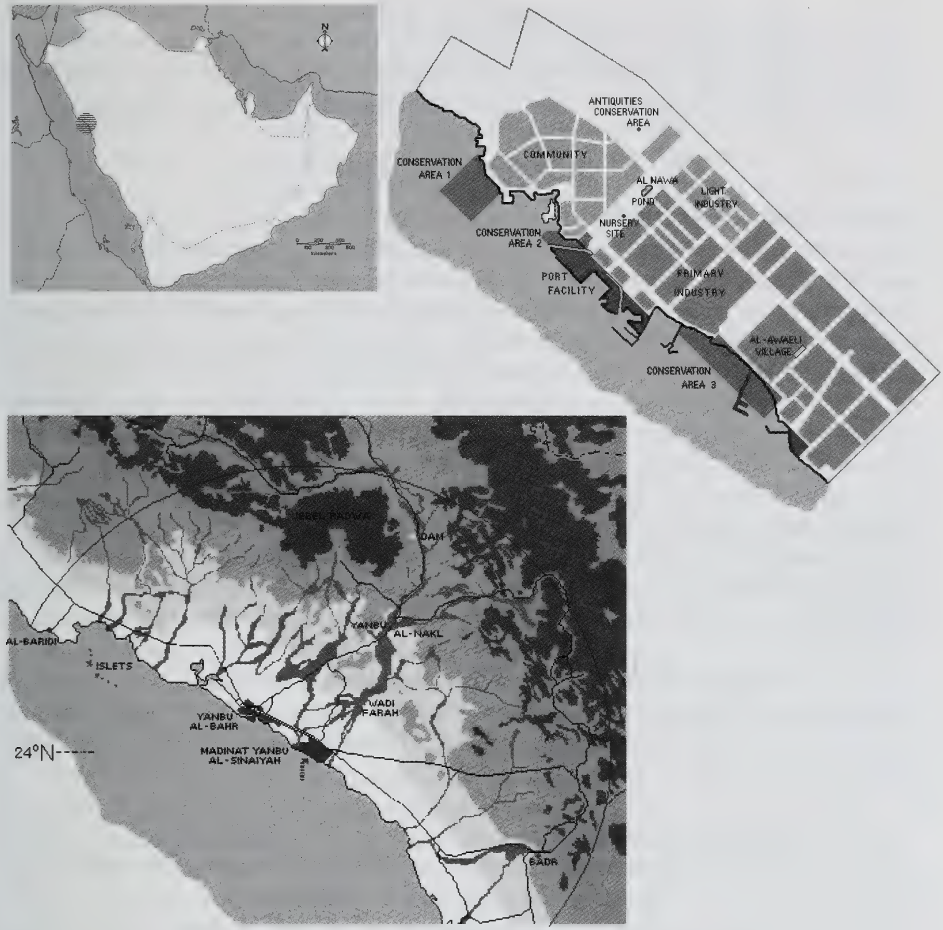
N
ANTIQUITIES CONSERVATION AREA
COMMUNITY
CONSERVATION AREA 1
AL NAWA POND
LIGHT INDUSTRY
NURSERY SITE
CONSERVATION AREA 2
PORT FACILITY
PRIMARY INDUSTRY
AL-AWAELI VILLAGE
CONSERVATION AREA 3
JEBEL RADWA
DAM
YANBU AL-NAKL
AL-BARIDI
ISLETS
YANBU AL-BAHR
WADI FARAH
24°N
MADINAT YANBU AL-SINAIYAH
BADR

Figure 1. Localities mentioned in the text and road network in the hinterland.

Further attempts (see B & M) to reach peaks at a level of 2,000 m on the Jebel Radwa range were not undertaken between 1987-94 but numerous visits to an equivalent juniper zone at 2,000 m on Jebel Figrah (see Evans 1994), which is just outside the recording zone, were made.

Field Identification Criteria

Notes on features relevant to identification were always made prior to reference to any literature. Hollom *et al.* (1988) became available in 1988 and was used as an identification aid in the field in preference to Heinzel *et al.* (1974). Porter *et al.*

(1974) remained valuable for field identification of raptors. During 1991-94 the guide by Lewington *et al.* (1991), which proved useful for central Asian species, was also normally taken in the field. However, no species new to Saudi Arabia was discovered between 1987-94. There is, to date, no national records committee in Saudi Arabia.

Species accounts

GREAT CRESTED GREBE *Podiceps cristatus*

One on the Al-Nawa pond from 21 December 1989 to 10 January 1990, five on the sea 50 km north of Yanbu al-Bahr on 11 December 1992. Not recorded by B & M. The species is a winter visitor in small numbers all along The Gulf and Red Sea – south to at least 20°N. On present evidence it is far less scarce on The Gulf than on the Red Sea, and on the former it is more abundant in the northern sector than in the southern half. In the north a concentration of over 100 birds has been observed (Bundy *et al.* 1989) and it has recently been proved to breed at a freshwater site near the coast (Lobley 2000).

RUDDY SHELDUCK *Tadorna ferruginea*

One at Wadi al-Farah Dam on 14 February 1992 and six on a wastewater evaporation pond at an industrial facility within MYAS on 10 January 1993. B & M cited six sightings in 1982 and 1986 but these were believed to have referred to only two individuals.

It is an erratic winter visitor to the Arabian Peninsula in small numbers (rarely in double figures), usually preferring freshwater to coastal waters. A small breeding population in the Eastern Province of Saudi Arabia (Bundy *et al.* 1989) is probably now extinct (pers. obs.)

LAMMERGEYER *Gypaetus barbatus*

Yanbu al-Nakl, an immature on 16 September 1988. B & M reported an immature at Wadi Farrah Dam on 9 August 1985. This was the only record.

The species is a much reduced resident in the highlands of western Arabia from Yemen to the Jordanian border, generally over 2,000 m (Jennings 1995). Most records away from known breeding haunts are wandering immatures; young birds appear to be dispersive (Shirihai *et al.* 2000).

GRIFFON VULTURE *Gyps fulvus*

Yanbu al-Nakl, single birds (all juveniles) on 4 November 1988, 21 January 1990 and 2 February 1990. One record in B & M. The above were probably local birds as there is no evidence of any southward passage along the piedmont zone or Tihama (Meadows 2001).

The species is resident in central, western and south-western regions of the Arabian Peninsula. Griffon Vultures were seen on virtually all visits between 1988-94 to Jebel Figrah (just outside the recording area), where they could possibly breed.

NORTHERN GOSHAWK *Accipiter gentilis*

An immature in the Community Area of MYAS on 10 November 1991. The bird was found in a small park and later seen almost overhead as it left its perch and flew off into the distance. A very large brown *Accipiter,* much larger than Eurasian Sparrowhawk *A. nisus* with a Common Buzzard *Buteo buteo* wing-span (present in the same area for comparison) and greater bulk across the chest; also a more protruding head and neck, and a short broader tail with a rounded tip. The underparts were streaked. There is a single late September record in B & M, albeit with the caveat that the bird could have been an escape, as the species is used in falconry.

Northern Goshawks are now reported in most years on the Arabian Peninsula, mainly between October and February (e.g. Bundy *et al.* 1989, Stagg 1991). In Riyadh it was not positively identified prior to 1987 but subsequent records suggest it is a winter visitor and spring passage migrant. Most records of Northern Goshawks in the Middle East are immatures.

LEVANT SPARROWHAWK *Accipiter brevipes*

Levant Sparrowhawks were identified over Yanbu along the western Arabian raptor fly-way (Meadows 2001) in the autumns of 1987 (one 31 September), 1988 (16 on 12 October, one on 13 September and two on 14), 1990 (70 on 29 September) and 1992 (one on 24 September). Silhouette more falcon-like than Eurasian Sparrowhawk *A. nisus* due to more slender and pointed wings. Some of the birds were adult males, which were seen directly overhead, and had white underparts contrasting with black tips to wings. All were seen soaring. The record of 70 birds consisted of a dense flock moving rapidly south over the piedmont zone in the hinterland while the remainder were seen over MYAS. Not recorded in B & M.

The species is a long-distance migrant with the main autumn movement from the West Palearctic to Africa through the Levant and crossing into Africa via the Gulf of Suez, with the reverse in spring. Most Levant Sparrowhawks therefore bypass the Arabian Peninsula. However, the above records show that, at least in some years, the species also uses the raptor flyway in western Arabia (Meadows 2001). The latter supplement other October records from further south, during 1979 and 1985 in north Yemen (Phillips 1982, Brooks *et al.* 1987) plus several records (also in October) during 1985 and 1987 of birds across the Bab-el-Mandeb (Welch & Welch 1988). Elsewhere on the Arabian Peninsula there are ten records from Kuwait, which includes five on 21 September 2000 (*per* Balmer & Betton 2002), and there is a single spring record from the Eastern Province of Saudi Arabia (Bundy *et al.* 1989).

MERLIN *Falco columbarius*

Yanbu al-Sinaiyah, male, possibly *F.c. pallidus* as indicated by very pale blue-grey coverts and whitish underparts, 3 December 1991. One previous winter record (B & M).

Merlins are scarce (1-9 individuals reported annually) winter visitors to north-eastern Arabia albeit only twice as far south as Bahrain, and central Arabia. In western

Saudi Arabia there are additional records from Tabuk and Jeddah (Jennings 1983), plus observations at Hodeidah and Aden in Yemen (Ennion 1962, Brooks *et al.* 1987). The Jeddah bird was apparently a specimen record of *pallidus*. One 70 km north of Riyadh (25° 30'N, 49° 30'E) also a male *pallidus* (Stagg 1991) and one at Hofuf (25° 20'N, 49° 38'E) was also assigned to *pallidus* (Bundy *et al.* 1989).

SOOTY FALCON *Falco concolor*

One flying over the Industrial City towards the coast on 1 July 1990 and one disturbed from mangroves within Conservation Area 1 on 29 September 1992. Both birds were adults. Once previously (B & M).

Breeding summer visitor to islands of the Red Sea, southern Arabia and The Gulf north to the Hawar Islands; also occasionally inland. The species normally nests on cliffs but Gaucher *et al.* (1995) reported on one Red Sea site where birds were found nesting on the ground (36-52 pairs) on raised coral reef islands covered by halophytes, fringed by a belt of mangroves *Avicennia marina*. The area was close to a site where migrating birds are claimed to be concentrated. The mangroves at Yanbu are also used by many migrants in autumn (Meadows 1992) but despite regular visits to these mangrove stands sightings were restricted to the above, indicating that the species is absent as a breeding bird from this section of the Saudi Arabian coast.

COMMON CRANE *Grus grus*

An adult (photographed) along a dry wadi within Yanbu al-Sinaiyah on 18 November 1990, and three flying over on 19 February 1992. The photograph has been deposited in the photo-library of the Royal Commission for Jubail and Yanbu, Yanbu Project. Not recorded by B & M.

Common Cranes are rare winter visitors to the Arabian Peninsula, usually singly, and the only records of flocks of over 10 birds are of 30 at Wadi Mawr in north Yemen (Brooks *et al.* 1987) and 22 at Al-Hasa in Eastern Province of Saudi Arabia (Evans 1994). The closest regular wintering grounds are in Jordan but larger numbers winter in Sudan and on the Ethiopian Plateau. However, unlike the Demoiselle Crane *Anthropoides virgo*, which is numerous on passage over western Arabia in autumn and spring to and from wintering grounds along the Nile in Sudan (e.g. Newton & Symens 1993), Common Cranes by-pass the Arabian Peninsula on passage.

BLACK-WINGED PRATINCOLE *Glareola nordmanni*

No records in B & M. Yanbu al-Bahr, four seen by BSM and I. Vickors on 1 October 1993. The birds were tame and seen at close range on the ground and in flight at a desert landfill site. Diagnostic features separating it from Collared Pratincole *G. pratincola* included black underwing coverts (seen at all light angles), lack of any white trailing edges to secondaries and no contrast between flight feathers and coverts plus darker upperparts.

The Black-winged Pratincole is a transequatorial migrant and most birds are believed to overfly the Arabian Peninsula. In contrast to *G. pratincola*, which is of annual occurrence and often occurs in large concentrations (>100 birds), it is a rare passage migrant throughout Greater Arabia. In western Arabia the species had previously been observed passing over Jeddah in April (Trott 1946), but the above was the first autumn record for western Arabia until 1996 when single birds were reported at Taiza and Aden in Yemen during October (*per* Davidson & Kirwan 1997).

PACIFIC GOLDEN PLOVER *Pluvalis fulva*
Two winter records. One on sludge-drying beds at the Industrial Wastewater Treatment Plant on 14 January 1989 and one along the shore near Conservation Area 2 on 7 January 1993. Not recorded by B & M.

The current status of this species has been revised in recent years partly due to the fact that many earlier records in Arabia could have been the result of misidentification with European Golden Plover *P. apricaria*. Apart from completely different profile at rest due to slimmer neck plus longer legs and, in flight, longer and narrower wings, supercilia on both above birds was much more prominent than in European Golden Plover. Jennings (1981) described the Pacific Golden Plover as an uncommon migrant and winter visitor to The Gulf but had no records from central Arabia or the Red Sea coast. In addition to the above winter sightings at Yanbu it has now also been identified in Riyadh – once in winter and on autumn passage between 23 July – 18 October (Stagg 1991). Also, an average of four a year are now usually found each autumn in Israel where European Golden Plover is a relatively common winter visitor (Shirihai 1996). It is a regular winter visitor and passage migrant on Bahrain (Hirschfeld 1995) with a peak in late September and October, and the latter is also the case on the adjacent Saudi Arabia coast (pers. obs.). A few reach as far south into Africa as coastal Kenya annually (Britton 1980).

NORTHERN LAPWING *Vanellus vanellus*
One flying low over MYAS on 11 November 1987. B & M listed two personal records involving a singleton in December and two birds in September. An additional record by J. Gasperetti of one in March was also included.

Jennings (1981) stated that the species was an uncommon winter visitor in Saudi Arabia. However, with the development of extensive pivot irrigation, particularly in the Northern Deserts of Eastern Province (pers. obs., *contra* Bundy *et al.* 1989) and central Arabia (Stagg 1991) flocks of up to 100 birds now occur annually in winter.

GREY PHALAROPE *Phalaropus fulicarius*
A female in breeding plumage on salt-pans at Yanbu al-Bahr on 5 June 1987. Not recorded between April 1979 and May 1987, albeit an impression of this bird was published in an appendix in B & M.

Porter *et al.* (1996) considered the species' status throughout Greater Arabia as a vagrant. Out of eight published records for Saudi Arabia three have been females in early June.

BRIDLED TERN *Sterna anaethetus.*
Not recorded between April 1979 and May 1987 (B & M). This species was breeding on islets north of Yanbu al-Bahr on 18 June 1993, with a tentative estimate of *c.* 150 nesting pairs on one islet and *c.* 25 pairs were feeding chicks at a second islet (Meadows 1993). Bridled Terns usually keep well offshore. However, there were observations from or close to the shore at MYAS: a party of five on 1 July 1993 and single birds on 28 June 1993, 26 July 1987, 13 August 1993, and 19-21 August 1993.

This tern is a summer visitor to all coasts of the Arabian Peninsula, nesting colonially on islands.

BLACK TERN *Chlidonias niger*
One at Al-Nawa pond on 1 November 1990. B & M list one record, also in November. Black Terns are rarely observed (*c.* 30 records) in Arabia. Cramp *et al.* (1977-93) stated that even eastern populations move south-west in autumn and the reverse in spring with most birds wintering in West Africa. However, there is a small regular passage through the eastern Mediterranean (Shirihai 1996) and birds have been recorded along the Nile Basin as far south as Lake Victoria (Britton 1980).

NODDY *Anous sp.*
Three all-dark terns seen by Dr. G. Lobley and BSM over the Red Sea north of Yanbu al-Bahr on 18 June 1993 were probably Brown Noddies *A. stolidus* (Meadows 1993b). Not recorded in B & M.

The Brown Noddy is a breeding summer visitor to the southern Red Sea, Arabian Sea and Gulf of Oman. Non-breeding birds have reached as far north as Al-Wedj (26°15'N, 36° 27'E).

CHESTNUT-BELLIED SANDGROUSE *Pterocles exustus*
One female with nine Lichtenstein's Sandgrouse *P. lichtensteinii* on the Tihama 12 km north-east of Yanbu al-Bahr on 14 July 1989. Not included in B & M albeit on at least three occasions single, relatively bulky sandgrouse with long tail streamers, which may have been this species, were observed in silhouette at dusk in 1984 and 1985 at an abandoned village described in B & M. The birds were seen arriving with other sandgrouse to drink at wells.

The species is currently known as a resident of coastal and lowland (below 1,000 m) areas of the southern half of the Arabian Peninsula from the Gulf of Oman to the Red Sea coastal belt. Hitherto, it had been recorded on the Red Sea coastlands as far north as Rabigh 22° 45'N, 39° 00'E (Bates 1936-37 and pers. obs.) and there is also an inland population in the vicinity of Medina (Jennings 1995 and pers. obs.).

AFRICAN COLLARED DOVE *Streptopelia roseogrisea*
First confirmed record was of a singleton at Wadi al-Farrah Dam on 27 May 1988. Subsequently 11 additional records of 1-2 birds up to 5 July 1993, with hinterland records from the vicinity of Badr Mosayid and Yanbu al-Nakl, plus several sightings within MYAS during the same period.

Not previously positively identified (B & M) but had almost certainly been overlooked in the hinterland. First confirmed record was based on disyllabic call-note, which was quite distinct from tri-syllabic call of Eurasian Collared Dove *S. decaoto*, also more white on edge of black collar that was particularly broad on sides of neck, whiter lower belly and undertail coverts.

The species occurs in western and southern Arabia. Apparently a breeding summer visitor to much of its range (Jennings 1995) although probably resident on the southern Tihama. Records at Yanbu all fall between May and September, save one in December. Many records in western Arabia are much further north and east than formerly known but this may have been because many areas had only occasionally or had never been visited in the past, rather than due solely to a range expansion as a result increased agricultural development. The latter is certainly the case for two other doves (Laughing Dove *S. sengalensis* and Namaqua Dove *Oena capensis*). In support of the former, however, there are earlier records from Badr Mossayid and one from just outside the recording area near Rayyis, 80 km south of MYAS (Goodman & Jennings 1988).

EURASIAN COLLARED DOVE *Streptopelia decaocto*
Ten additional records of 1-2 birds between 11 June 1987 and 10 January 1991. All occurrences were within the Industrial City. In 2003, however, BSM found that the species was also present in Yanbu al-Bahr. B & M list two records – the first was an immature in November 1984 that remained until February 1985. At the time these were the first records of the species in western Arabia, as the species did not reach Jeddah until 1986 (Goodman & Jennings 1988). Eurasian Collared Doves are recent colonists of the Arabian Peninsula; they were first recorded in Kuwait in about 1963 and subsequently expanded their range into north, central and eastern Arabia (Jennings 1995).

GREAT SPOTTED CUCKOO *Clamator glandarius*
An October observation of a single bird in mangroves was the only record in B & M. One additional autumn record and five spring records: one on 27 July 1989, one on 24-27 February 1990, two on 31 March 1990 and one on 29 April 1990, single birds on 9 and 11 March 1994. The autumn bird was seen in mangroves at Conservation Area 1 and the last bird near the Holiday Inn Hotel near Yanbu al-Bahr. The remainder were found within the Community Area in MYAS.

Scarce passage migrant in western Arabia, but vagrant elsewhere in Arabia (Porter *et al.* 1966). Also, three specimens collected at Zeima (21°35'N, 40° 06'E) in January 1945 (Goodman and Jennings 1988) and a record of overwintering at Tabuk (F.J.

Walker in Jennings 1981) suggest that it may winter locally in western Arabia. Migrants appear in coastal Eritrea in November and stay until March (Moreau 1972).

BARN OWL *Tyto alba*

Four or five records of single birds in the Community Area of the Industrial City on 17 January 1989, 17 January 1992, 6 July 1993 and 28-29 July 1993, and 25 September 1989. Also once at Yanbu al-Nakl on 6 April 1989. B & M had two records from the Industrial City but none from the hinterland.

The Barn Owl is likely to prove to be a relatively common resident over most of the Arabian Peninsula but it is rarely seen. Current distribution is mapped in Jennings (1995).

STRIATED SCOPS OWL *Otus brucei*

Observations during the period under review confirmed that this species is a not infrequent winter visitor to Yanbu, frequently hunting in the vicinity of streetlights: one on 21 January 1990, ten definite sightings (including two together) between 2 January and 2 February 1991, singletons on 29 January and 7 February 1992, One on 7 February 1993. All birds were seen within the community area of MYAS. Confusion with Scops Owl *Otus scops* was eliminated on all occasions: the majority were adults having much greyer underparts that were distinctively streaked black with no obvious vermiculations. B & M listed one December record.

The species has, hitherto, been considered a vagrant in Arabia. There are four records from Bahrain (Nightingale & Hill 1993) but it was not definitely identified in eastern Saudi Arabia until the author found a dead bird at Jubail in December 1994 and another (also at Jubail) was mist-netted and seen by BSM on 9 February 1995 (*per* Kirwan 1995). It has not been recorded in Kuwait (Anon. 2001) and there are no records from the Riyadh area (Stagg 1991). The subspecies *exigus* has been obtained in Bahrain and the 1995 Jubail bird was also probably this subspecies. On the other hand plumage of birds seen in Yanbu (less silver-grey) were considered to be closer to *O.b. obsoletus. O.b. pamelae*, which is a resident breeder in UAE and Oman, is considered a subspecies of Senegal Scops Owl *O. senegalensis* (Shirihai 1996).

The species is almost certainly overlooked and the above records indicate it is probably a fairly regular winter visitor to the central Hejaz.

LITTLE OWL *Athene noctua*

One in the foothills of Jebel Radwa on 6 November 1987. Not recorded in B & M, although the above record is not surprising as it had been known to be present on nearby Jebel Figrah since 1986.

It is a widespread resident on mountains and in semi-desert areas throughout the Arabian Peninsula (Jennings 1995).

NUBIAN NIGHTJAR *Caprimulgus nubicus*
Two records from within MYAS – one (a road kill) on 24 June 1988 and one on 26 April 1991. B & M had one July record (also a road kill) from the hinterland; the specimen was handed over to Dr. Hassan Felemban of King Abdulaziz University, Jeddah.

The Nubian Nightjar is a breeding summer visitor (a few are resident) to sandy deserts with scattered vegetation on the Arabian Peninsula, where it is restricted to the Tihama and eastern fringes of the western highlands. The literature (e.g. Porter *et al.* 1996) indicates a gap between the Levant and south-west Arabia but such a discontinuous distribution is almost certainly erroneous as in addition to the above records BSM has found the species in suitable habitat elsewhere in the central Hejaz and north-west Arabia.

EGYPTIAN NIGHTJAR *Caprimulgus aegyptius*
One in a small park in the Community Area at MYAS on 16 October 1992. B & M recorded this species on one occasion – a presumed early spring migrant in late February 1985.

The species is a regular, albeit scarce, spring and autumn migrant throughout the Arabian Peninsula with some wintering in Oman and Yemen. However, it is almost certainly overlooked due to its crepuscular behaviour, as indicated by recent records from Kuwait – 20 shot at two localities in September 1999 (Gregory 2000), and in the UAE where up to 15 apparently present at one site during September-October 2001 (*per* Balmer and Betton 2002).

ABYSSINIAN ROLLER *Coracias abyssinicus*
An adult was present in the grounds of a nursery (usually to be found at top of a large eucalyptus tree) within the Industrial City from 6-20 July 1993 (also seen by I. Vickors). Easily separated from European Roller *C. garrulus*, which has once summered at Yanbu, by having outer tail feathers forming two long narrow streamers and much paler face. The occurrence followed an unusually wet spring at Yanbu and coincided with a plague of locusts. Not recorded in B & M.

This Afro-tropical species is also resident on the Tihama and foothills of western Arabia, to a latitude of 18°N. In Africa, where it breeds south of the Sahara east to Ethiopia and west Somalia, some are resident while others are well-defined rains migrants, being present as non-breeding visitors for the duration of the dry season. The above bird could have been such a migrant since there are records from Egypt and Libya at a similar latitude to Yanbu (Fry *et al.* 1988).

ARABIAN WOODPECKER *Dendrocopos dorae*
One in open acacia woodland east of Yanbu al-Bekaa at boundary of recording area on 9 October 1992. Also at 1,900 m in junipers on Jebel Figrah on 5 April 1991, just outside of the recording area. These records represented a northerly range extension of 50 km for this Arabian endemic at the time. Not recorded in B & M.

Three out of the eight endemic species of south-west Arabia reach the latitude of Yanbu al-Sinaiyah but this was the only one recorded between 1979-1994 within 75 km. However, the Arabian Serin *Serinus rothschildi* may occur in the future as it has become a common visitor to gardens in Medina at 28° 28'N, 39°, 32'E (pers. obs.) and although it has not spread across the Tihama anywhere within its range it could reach the acacia woodland of the piedmont foothills, as in the case of the Arabian Woodpecker. The Arabian Red-legged Partridge *Alectoris melanocephala* has also been discovered on Jebel Figrah at 1,900 m (pers. obs.) but the species can occur down to sea-level.

COMMON REDSTART *Phoenicurus phoenicurus*

B & M reported the Common Redstart as a regular passage migrant in spring (March-May) and autumn (September-November) but records referred to the nominate race. Two males of the white-winged race *samamisicus*, which breeds mainly from Turkey east to Iran, occurred together with a heavy fall of nominate birds on 17 April 1993 at Conservation Area 1 (Meadows 1994a). Single males of the same race were also seen in the Community Area of MYAS on 19 March 1991 and 12 April 1994. In eastern Arabia where *samamisicus* is regular in spring most birds pass through in March (Hirschfeld 1995 and pers. obs.), and normally outnumbers the nominate race at this time of the year. It has been recorded passing Riyadh in March and early April (Stagg 1991).

STONECHAT *Saxicola torquata*

B & M recorded the Stonechat as a regular spring (February-May) and autumn (September-December) migrant. Subspecies were not differentiated in the text, although *rubicola* was considered the most common. 'Siberian' Stonechats were never positively identified until the autumn of 1987 although, in retrospect, it cannot be excluded that two reported winter records of Whinchat *S. rubetra* in B&M were incorrectly identified 'Siberian' Stonechats.

Stonechats of the *maura/variegata/armenica* group were confirmed as regular double passage migrants with peaks in November and March. Extreme dates in autumn were 25 October to 30 November and in spring from 22 February to 28 March. One distinctly marked individual remained in a dry wadi with halophytic vegetation for five days in November and another stayed in BSM's garden for seven days in March.

There was a total of 21 records involving at least 42 individuals between 1987 and 1994, including a fall of 16 birds on 3 November 1993. Based on the presence of much white at base of tail, several individuals, particularly during the autumn of 1990, were considered to be *variegata.*

The race *maura* has been recognized as a regular winter visitor to eastern and central Arabia (Hirschfeld 1995, Richardson 1990, Stagg 1991) with *armenica* and *variegata* as passage migrants. The last two races winter in north-east Africa from the Sudan to the Somali Peninsula; both reach Eritrea and Ethiopia but *variegata* is the most abundant (Urban & Brown 1971) and is the only subspecies reported as far east as Somalia (Moreau 1972).

CYPRUS PIED WHEATEAR *Oenanthe cypriaca*
Two spring records. A female on 4 March 1989 in Conservation Area # 1 and a male at a landfill site near Yanbu al-Bahr on 7 March 1994. These records are not surprising in view of its assumed migration route through the Middle East to wintering grounds in Sudan and Ethiopia (Shirihai 1996). Nevertheless, they appear to be the first along the Red Sea coast of Saudi Arabia for over 60 years (Bates 1936-37). Both birds were in breeding plumage: considered to be slightly smaller than Pied Wheatear *O. pleschanka* (an individual in 1994 had been seen 3 days earlier) and with narrower white rump, rusty-buff underparts below a black throat. The 1989 bird had brown upperparts and a dark crown was bordered by a distinctive whitish stripe.

RED-TAILED WHEATEAR *Oenanthe xanthoprymna*
A male of the nominate race in the Community Area of MYAS 3-4 March 1991. The bird was seen on a lawn in a small park and was immediately identified from *O.x. chrysopygia* by its black throat and black sides of head that merged with blackish-brown leading wing coverts, a prominent eye-stripe plus white sides to tail that gave a far less dull-looking appearance. Points of separation from a male Red-rumped Wheatear *O. moesta* included rufous rather than orange rump, blackish brown crown and nape, and lack of prominent white edges to flight feathers. B & M described this species as a scarce migrant, more frequent in spring than autumn with November and December records from the hinterland. However, as in much of the literature at the time (e.g. Jennings 1981), subspecies were not mentioned.

Two subspecies are recognized but most of the breeding range is occupied by *O. x. chrysopygia*, with the nominate form being confined to a much smaller and more westerly area (includes E. Turkey and NW Iran) and this difference is reflected in the latter's more westerly distribution in winter. *O. x. xanthoprymna* passes through the Levant and apparently winters in Egypt, where *chrysopgsia* was unrecorded until 2001 (*per* Balmer & Betton 2002) and along the Red Sea coast of the Sudan along with *chrysopygia*. In Eritrea only *chrysopygia* (Moreau 1972) is present. The subspecies that occurs as a migrant through Arabia and individuals wintering on the Arabian Peninsula are almost exclusively *chrysopygia*. Rahmani *et al.* (1994) listed only *chrysopygia* from the Tihama between Jeddah and Jizzan.

MOURNING WHEATEAR *Oenanthe lugens*
Observations during the period under review produced ten records in 1988, 1989, 1990, 1992 and 1994 with a monthly distribution, as follows: October (1), November (3), January (1), February (2) and March (3). Extreme dates: 28 October and 18 March.

BSM found a hitherto unknown population of Mourning Wheatear breeding at Madain Salah (26°45'N, 40°42'E) in 1986 and subsequently; it was assumed that four birds recorded by B&M in Yanbu were individuals that had dispersed from this locality and/or other adjacent sites within the Hisma sandstones of north-west Saudi Arabia where the species was also subsequently found. However, this is now considered unlikely as these latter populations (race uncertain but probably either *O. l. lugens* or *O. l. halophila*) are apparently resident and all Yanbu records are probably referable to the race *persica* (see also Jennings 1995).

The subspecies *persica*, which breeds in Iran, is a regular winter visitor in small numbers throughout most of the Arabian Peninsula. Although none of the above birds were handled several were observed at close range and their deep buffish-cinnamon undertail-coverts and brownish-grey speckled crowns and napes indicated *persica.*

FIELDFARE *Turdus pilaris*

One on 16 December 1988 and at least two birds from 6 January – 23 February 1989. One on 29 March 1990. All observations in small parks within MYAS. Not recorded by B & M.

Fieldfares are irregular (not annual) winter visitors to eastern Arabia (rarely as far south as Bahrain) and north-west Arabia (Tabuk).

REDWING *Turdus iliacus*

A small influx within MYAS during the 1991/2 winter: two from 5-16 January feeding on fallen dates in a palm grove and a flock of seven on 20 January. The former were initially discovered by I. Vickors. No records in B & M.

The Redwing is an erratic winter visitor to Kuwait, Eastern Province of Saudi Arabia and Bahrain, plus it has occurred on three occasions as far as the lower Gulf in U.A.E. The above records are, however, the first in western Arabia.

RIVER WARBLER *Locustella fluviatilis*

Not recorded by B & M. One hit the author's office window within MYAS on 5 September 1989. The bird was examined in the hand. Rounded, almost graduated tail, relatively long thin bill, faint whitish eye-stripe indicated a *Locustella* warbler. Overall colouration was grey-brown with unstreaked upperparts, diffuse, but obvious, streaks on throat (unlike *fusca* race of Savi's Warbler *L. luscinioides*), plus similar streaks and spots on breast; throat was slightly lighter than rest of underparts; long undertail-coverts were buffish-brown and distinctly tipped off-white. A passage migrant throughout Greater Arabia but rarely recorded because of its secretive behaviour (Porter *et al.* 1996).

OLIVE-TREE WARBLER *Hippolais olivetorum*

One at the Hyatt Hotel, near Yanbu al-Bahr, on 10 August 1990. The bird was seen at close range foraging on the ground and in a low bush. Features noted: a typical *Hippolais* warbler with square-ended tail but much larger than Olivaceous Warbler *H. pallida* (present at same time); distinctive brownish grey upperparts with relatively huge dagger-like bill, flat crown, white panel and broad fore-supercillium. BSM listed two previous records (once each in spring and autumn). In Arabia considered as a vagrant to Saudi Arabia and Yemen by Porter *et al.* (1996), but more likely to be a regular spring and autumn passage migrant that has been overlooked.

MENETRIES'S WARBLER *Sylvia mystacea*

B & M listed one positive record. However, during 1987-1994 this species (race/s not determined) was a regular winter visitor and passage migrant. It was no doubt significantly under recorded between 1979-1987, in part, due to inadequate field identification guides for the Middle East being available at the time. Extreme dates were 12 October to 12 April with monthly distribution of records as follows: October 2, November 4, December 6, January 5, February 3, March 3 and April 1. Two of the March records involved presumed migrants that were observed in mangroves, which are the first records for this species in this habitat at Yanbu (Meadows 1992). In 1990 a bird stayed in BSM's garden from 28 January to 28 February. A male and a female were also seen in MYAS on 11 February during BSM's visit in 2003.

The species was not listed in Rahmani *et al.* (1994) from the Tihama in Saudi Arabia between Jeddah and Jizzan although Bates (1936-37) mentioned January records from Jeddah. In central and eastern Arabia it is a regular migrant and winter visitor.

It is also likely that some closely related *Sylvia* warblers, particularly Cyprus Warbler *S. melanothorax* and/or Middle East *momus* race of Sardinian Warbler *S. melanocephala* were overlooked or passed over at Yanbu and the status of both species still needs to be determined. To date there are single specimen records for each species in western Saudi Arabia (Goodman & Jennings 1998). Subalpine Warbler *S. cantillans* is also possible in spring, but most Ruppell's Warbler *S. ruepelli,* also a known spring migrant in north-west Arabia, seem to pass further north (closest BSM recorded this species to Yanbu was 280 km away near Al Wedj at 26° 00'N, 36° 30'E).

RED-BREASTED FLYCATCHER *Ficedula parva*

The record in October 1985 (B & M) was the first published record for the central Hejaz and this was followed by a second bird near Masturah (23° 06'N, 38° 50'E), seen by BSM and J. Plunkett on 11 November 1988. Subsequently, in 1992 and 1993, several occurred within MYAS: 1992: one from 2-6 November but three on 3 November, another on 18 November, two on 19 November, one from 20-21 November and one (in a different area to previous sightings) on 25. All these birds (probably at least eight individuals) were seen within the Community Area. 1993: a singleton in mangroves at Conservation Area on 3 November.

A rare migrant and winter visitor to central and eastern Arabia (Jennings 1981). The majority of records, as for Yanbu, are also in late autumn e.g. all pre-1990 records in Bahrain were between October to November (Nightingale & Hill 1993), the only three seen in Riyadh up to 1988 were in November and December (Stagg

1991). The only evidence of spring passage is based on an April record in U.A.E. (Richardson 1990) and a late March bird in Kuwait (Anon. 2001), which could have overwintered.

COLLARED FLYCATCHER *Ficedula albicollis*

One additional spring record: a male in a small park on 27 April 1988. The bird had a complete white collar (i.e. joined around hindneck), a pale rump and larger, more rounded white forehead patch than three male Semi-Collared Flycatchers *F. semitorquata* seen at Yanbu during the same month. There are two previous May records at Yanbu (B & M). Although Jennings (1981) described the species as a rare migrant in western areas of Saudi Arabia, Porter *et al.* (1996) did not mention it as occurring on the mainland of the Arabian Peninsula. It is a regular passage migrant in the Levant.

PYGMY SUNBIRD *Anthreptes metallicus*

First observed in November 1987 when 2-3 individuals were seen in acacia 25 km east of the Yanbu al-Nakl valley close to the abandoned village of Yanbu al-Bekaa. During 1988/90 the species was recorded for the first time at sea-level within MYAS and in each of the four subsequent winters (extreme dates 2 November and 18 March) birds occurred in significant and increasing numbers, visiting flowers (particularly acacias) in now fully-mature private gardens and municipal landscaped areas. Unlike two other Afro-tropical species, African Collared Dove and African Silverbill, that may have been overlooked in the past, the occurrence of Pygmy Sunbirds, at least in the Industrial City from 22 December 1988, was a new phenomenon. In later years birds were heard singing on several occasions and a male was seen in complete breeding plumage on 17 March 1994. These records represent a northerly range extension of approximately 250 km. The only sunbird listed by B & M was the Orange-tufted Sunbird *Nectarinia osea*.

On the Arabian Peninsula, Pygmy Sunbirds are resident in acacia scrub and semi-desert areas of Tihama, foothills and drier parts of the south-west, especially the eastern fringes, extending to eastern Yemen and Dhofar (Jennings 1995).

SHINING SUNBIRD *Nectarina habessinica*

Three were found near Badr Mossayid, 75 km east of MYAS on 13 March 1992. One was also seen by BSM in March 1994 at 1,900 m on Jebel Figrah, and there are other recent records that also indicate a significant range extension for this species north of Taif (Jennings 1995).

Shining Sunbirds are resident with seasonal movement in western and southern Arabia, 250 m – 2,500 m but mostly lower altitudes, wherever dense vegetation occurs (Jennings 1995, Porter *et al.* 1996). In northern Oman and the U.A.E. it is replaced by the closely related Purple Sunbird *N. asiatica*.

STEPPE GREY SHRIKE *Lanius pallidirostris*

Seven birds were identified by BSM and I. Vickors in MYAS during September 1993 (3 on 20, 1 on 21, 2 on 24 and one on 30). The Steppe Grey Shrike, previously considered a race of Great Grey Shrike *L. exubitor,* is now usually given specific status (e.g. Clement 1995). Races of Great Grey Shrikes were not mentioned in B & M. The species breeding within MYAS is *aucheri,* which is now widely accepted as a race of Southern Grey Shrike *L. meridionalis.*

The Steppe Grey Shrike is a passage migrant and winter visitor to the Arabian Peninsula, chiefly in the south and east but has probably been overlooked in west and north-west Arabia. Some could have been mis-identified on occasions in the past for first-winter Lesser Grey Shrikes *L. minor*, particularly due to their long wings, with a long primary projection that approaches Lesser Grey Shrike. All the above birds had even longer tails than *L. minor*, much paler whitish-grey upperparts, more extensive white in wings and white patches on scapulars that are not present in Lesser Grey Shrike. Lesser Grey Shrikes are annual autumn migrants (peaking in *early* September) to the central Hejaz.

AMETHYST STARLING *Cinnyricinclus leucogaster*

Not recorded in B & M. One male seen exposed near top of a mature fig tree in a small park within MYAS on 7 April 1989. Unmistakable with upperparts and breast glossy violet-blue contrasting with white abdomen indicating adult male. Black bill.

A breeding summer visitor, arrives March in the foothills and drier highlands of western Arabia, usually between 600 – 2,000 m (Jennings 1995) but this is the first record north of Jeddah and was probably a migrant overshoot. It has also occurred in Israel (Shirihai 1996).

COMMON MYNA *Acridotheres tristis*

B & M listed two records (involving three birds). The first bird in 1985 frequented the Sanitary Wastewater Treatment Plant in the Port Area that raises the possibility that it was ship-assisted, as implicated for the spread of the House Crow *Corvus splendens* along the western Arabian coast from Jeddah to Yanbu. Many sightings after 1987, including first breeding record in 1988. It had become well established in the Industrial City and also at Yanbu al-Bahr by 1994 as a relatively common breeding resident with flocks of up to 30 birds.

The species has only recently colonized the Arabian Peninsula presumably, at least initially, by escaped cage birds. There were no records for Saudi Arabia up to April 1981 (Jennings 1981) but it is now a common bird in several urban centres (Jeninngs 1995), where after establishing viable populations they have apparently spread out to adjacent agricultural areas and smaller towns. For example, in the Eastern Province of Saudi Arabia it was first found at Dhahran in 1984 (Bundy *et al.* 1989). After a decade it had become established approximately 100 km north-west at Jubail Industrial City and in 2001 two pairs were found breeding (pers. obs.) at an isolated farm separated by 40 km of desert from Jubail. At Riyadh, where the species first appeared in 1984 (Stagg 1991), it had reached Thumamah, a village 70 km to the north by 1991 (Rietkerk & Wacher 1996), whilst in Oman it has extended its range north-westwards along the Batinah coast from Muscat, as far as Sohar (*per* Davidson & Kirwan 1996). Beyond Greater Arabia it has now spread westwards to Turkey (*per* Kirwan 1999) and Egypt (Millington 2000). Yanbu could have been a possible source area for its recent occurrence in Egypt.

SPANISH SPARROW *Passer hispaniolensis*

Winter visitor but only since winter of 1988/9, particularly to barley packing plants where grain is stored in the open. Extreme dates 10 January –17 March. Largest flock was 450 on 10 January 1992. In Riyadh it was also first recorded in winter of 1988/9 (Stagg 1991). The species' increase in recent years is probably linked with expanding agricultural development in the Arabian Peninsula. It now also breeds annually, for example, in areas with farms in Eastern Province, Saudi Arabia. Several birds were seen at Yanbu al-Bahr between 10-15 February 2003.

AFRICAN SILVERBILL *Euodice cantans*

Not recorded in B & M. There were six records of small flocks (5-23) in the Yanbu al-Nakl valley between 1987 and 1992 during the months of November, January, February and March. The birds were seen in acacia scrub and newly planted open cultivation but, unlike the Indian Silverbill *E. malabarica*, which colonized Yanbu al-Nakl during the 1980's (Meadows 1994b), the species was never found within any of the palm plantations in the valley. In February 2003 BSM again found African Silverbills along the Yanbu al-Nakl valley in both natural acacia steppe and open cultivation.

The African Silverbill is relatively abundant in western and southern Arabia, mainly on the Tihama and drier parts of the highlands. It breeds in the Dhofar but further east, where the extremely arid zone between Dhofar from northern Oman occurs, indigenous populations of African and Indian Silverbills are separated. Along the Tihama it breeds regularly as far north as about the Tropic of Cancer (pers. obs.) which is approximately the northern range also of Ruppell's Weaver *Ploceus galbula* – a species not yet observed at Yanbu. In Africa abandoned weaver bird nests are favoured nesting sites.

TRUMPETER FINCH *Bucanetes githagineus*

Trumpeter Finches were found to be thinly, although widely, distributed in the central Hejaz (personal records from Umm Laij, Medina, Khaybar and Madain Salah). Within 75 km of MYAS it had previously been recorded only at Yanbu al-Nakl (two records in B & M) but during the winter of 1988/9 there was an exceptional influx into the area with birds being attracted, in particular, to two barley packing plants at Yanbu al-Bahr, where grain was being stored in the open. At the barley plants huge flocks (1000 + individuals) were present for several weeks in January and February. These large numbers were seen only during the 1988/9 winter. Cramp & Perrins (1996) stated that the species has an erratic pattern of movements, abundant in some years and absent in others. It is gregarious outside the breeding season but flocks are not usually large (100, e.g. Jennings 1995) so that these numbers are without precedent.

Discussion

Some of the records listed above clearly reflect range extensions due to previous lack of observations, with Bridled Tern, Nubian Nightjar, African Woodpecker and Shining Sunbird, being cases in point. Others could be due to this or a result of increased agricultural development. Additions in this category include African Collared Dove and African Silverbill. The occurrence of Pygmy Sunbird in Yanbu al-Sinaiyah is definitely the consequence of the provision of flowering plants due to the extensive landscaping that occurred during the final development phase of the city described in the section covering site details.

One outcome of my residency was to document an annual concentrated movement for five species of soaring raptors from late August to November over Yanbu (Meadows 2001). The records of Levant Sparrowhawk confirm that, at least in some years, this species also uses this flyway en-route to Africa.

Some winter visitors, which are annual further north in Greater Arabia, seem to occur only erratically as far south as Yanbu. Additions such as Fieldfare and Redwing fall into this category. In this regard it is worth mentioning that while the Common Starling *Sturnus vulgaris* was seen in four consecutive winters, as from 1982/3, none were observed by BSM between 1986 and 1994.

The occurrence of two Afro-tropical migrants at Yanbu, Abyssinian Roller and Amethyst Starling, could have been due to individuals overshooting their normal range. The inclusion of numerous records of at least one species, Menetries's Warbler, has been due to improved knowledge of field identification criteria that has become available subsequent to publication of B&M.

Finally, additional records of Olive-tree Warbler and Collared Flycatcher, and new records of Cyprus Pied Wheatear, together with confirmation of the nominate race of Red-tailed Wheatear, are in line with the relative annual abundance of other species originating from the eastern Mediterranean Basin that pass through the central Hejaz, such as Black-eared Wheatear *Oenanthe hispanica*, Masked Shrike *Lanius nubicus* and Cretzschmar's Bunting *Emberiza caesia*, as compared with eastern Arabia. A central Asian component is, nevertheless, also well represented at Yanbu.

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Nesting activity of Wallace's Wren *Sipodotus wallacii* in Crater Mountain, Papua New Guinea

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The passerine family Maluridae is comprised of five genera and thirty species restricted to the Australo-Papuan region (Rowley & Russell 1997). The monospecific genera *Clytomyias* and *Sipodotus* and three species of *Malurus* are confined to New Guinea. The other twenty-five species occur in Australia and are relatively well-studied compared to New Guinea species (Schodde 1982, Rowley & Russell 1997).

Although the distribution of Wallace's Wren *Sipodotus wallacii* is locally patchy, it is typically found throughout mainland New Guinea in a narrow zone of foothill rainforest between 100 and 800 m above sea level and also on Misool, Aru, Yapen and possibly Goodenough Islands (Rand & Gilliard 1967, Coates 1990). Occasionally, it has been recorded in lowland forests below 100 m (e.g. the Trans-Fly) and in lower montane forests up to 1,200 m (Coates 1990, Rowley & Russell 1997). Breeding is only known from lowland rainforests near Port Moresby (Bell *et al.* 1979).

S. wallacii typically forages in groups of 3-8 individuals, thought to be family parties (Bell *et al.* 1979, Mack & Wright 1996). Co-operative breeding is common among the Maluridae, but has not been confirmed for *Sipodotus* (Rowley & Russell 1997).

The phylogenetic placement of *Sipodotus* is unknown (Rowley & Russell 1997). However, the most recent systematic treatment of the Maluridae supports the monophyly of *Malurus*, suggesting a basal position for *Sipodotus*, but the absence of biochemical samples precluded the inclusion of *Sipodotus* in the phylogenetic analysis (Christidis & Schodde 1997).

Here we present the second record of nesting activity in *Sipodotus* and report differences in nest construction, proportion and site from previous accounts. We also present data on parental activity at the nest and report both geographic and altitudinal breeding range extensions for the genus.

Study area and observations

Our observations were made at the Crater Mountain Biological Research Station (CMBRS), 10 km east of the Haia airstrip in southern Chimbu Province, Papua New Guinea. The station is *c.* 900 m above sea level (145° 05' 34.5"E, 6° 43' 26.2" S) and it's surrounding study area extends from 850 m to 1,250 m elevation. The flora is very diverse and includes the transition from lower hill forest to lower montane forest (Wright *et al.* 1997).

In early August 1999, *Sipodotus* individuals were occasionally seen at *c.* 1,250 m. On 14 August, we observed a single individual in this area with vegetation in its bill, but no nest was found. On 9 September, we searched the area and located an active nest.

The nest was centrally located in a shrub (*Medinilla* sp.: Melastomataceae) *c.* 1.5 m tall clinging to the top of a rocky cliff face and above a *c.* 30 m vertical drop. Cliff face vegetation was epiphytic (Poaceae, Melastomataceae, Orchidaceae, *Schefflera*: Araliaceae, Pteridophyta). The nest was well concealed in vegetation hanging over the precipice and its entrance faced away from the rock, making it difficult to examine the contents.

The nest was domed, *c.* 130 mm tall by 90 mm diameter, with a wide side entrance near the top. The roof over the entrance may have projected slightly over the entrance, but no obvious overhang or awning was visible. The top of the nest was attached to several small branches and twigs with no major branches or limbs supporting it from below. The nest was of grasses and fibrous strips, perhaps from palm, *Pandanus,* and/or bamboo leaves. The interior was lined with finer plant fibres while the outside was well concealed with bits of mosses and epiphytes inserted or bound to the structure with spider webs. In outward appearance the nest was visually similar to many tangles of epiphytes and leaves growing on the cliff.

Despite being well concealed, we were able to locate the nest due to the incessant begging of nestlings within. By carefully pulling the branches with the nest toward the cliff edge we were able to peer inside briefly. The nest contained two nestlings that we estimated to be roughly one week old.

We observed the nest for 3 h on each of 9 and 10 September, between 1000-1400 h during which the nestlings did not stop begging. Begging notes were high, thin, and insistent. When parents approached the nest begging became louder and more insistent. Sometimes approaching adults gave a quiet chip that heightened begging from the nestlings.

Between 1200 and 1330 h on 9 September, the attending adults made 38 feeding visits (mean interval = 2.8 minutes, SD = 2.3). They foraged in the forest canopy below the nest, usually within *c.* 75 m horizontal distance of it. Prey were mostly unidentified insects, but included green Lepidoptera larvae, *c.* 10-15 mm long, captured in the canopy of a tree (*Trema* sp., Ulmaceae). Upon capturing prey, birds flew to the cliff below the nest, to then make short flights up the cliff-side vegetation.

We watched the feeding activity of the attending adults for evidence of co-operative nestling care. We could often keep track of two birds simultaneously as they foraged in the forest canopy below, but at no time were more than two individuals seen.

In early September 2000, we revisited the site where *Sipodotus* had nested in September 1999 to find no evidence of active nesting, nor any *Sipodotus* in other parts of the CMBRS study area.

Discussion

Until recently, *Sipodotus* had not been recorded in eastern New Guinea between Mt Bosavi and Port Moresby (Mack & Wright 1996). Diamond (1972) did not record the species on nearby Mount Karimui nor for the Eastern Highlands region. Our findings reconfirm the occurrence of *Sipodotus* in south-eastern New Guinea, and confirm breeding there.

During a period of intensive fieldwork at the CMBRS from 1989-1993, *S. wallacii* was not commonly found; groups of approximately 3-5 individuals were only occasionally seen in thick secondary growth and vine tangles, 7-20 m above ground around 900-1,000 m elevation (Mack & Wright 1996). The groups did not remain in the area for very long, leading Mack & Wright (1996) to surmise that they were semi-nomadic, moving between islands of appropriate regrowth in a vast matrix of primary forest. Our observations support to those of Mack & Wright (1996) and Bell *et al.* (1979) that *Sipodotus* are transient and that breeding does not necessarily occur in the same area over consecutive years.

Our observations of nest proportions and placement differ somewhat from the only previous account (Bell *et al.* 1979). Although the species is recorded locally to 1,200 m, our findings indicate breeding at its upper altitudinal range, well above the only other breeding record. The previously described nests were located in vine tangles 5 and 8 m above the ground, whereas the one we observed was on a cliff face *c.* 30 m. above the ground. The nest we observed was shorter and wider than the two Brown River nests, which measured 150 x 55 and 155 x 85 mm respectively. In addition, the nests described by Bell *et al.* (1979) apparently lacked a mossy exterior.

The only clutch described for *S. wallacii* (Bell *et al.* 1979) contained two eggs, but it was not known if this number represented the entire brood. Our finding of two nestlings supports the observation of Bell *et al.* (1979) and suggests that brood size is two.

Most malurids exhibit some co-operative breeding and/or delayed dispersal of offspring (Rowley & Russell 1997). In *Sipodotus*, evidence for helpers at the nest, and co-operative breeding is relatively weak. The occasional observation of small group, hypothesized to be family parties, supports the possibility of delayed dispersal of offspring, but neither our observations nor those of Bell *et al.* (1979) provide convincing evidence that more than two individuals provision nestlings. In addition, because of the possibility that *Sipodouts* is a basal lineage, it is reasonable to expect that a derived behaviour such as co-operative breeding might be absent. However, the extent of co-operative breeding in malurids varies by location, time and species (Rowley & Russell 1997), and so it is not possible to draw explicit conclusions on the extent, if any, of co-operative breeding in *Sipodotus* with the limited available data.

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The Pennant-winged Nightjar *Macrodipteryx vexillarius* (Caprimulgidae), its generic status, synonyms and types

by Nigel Cleere

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The Pennant-winged Nightjar *Macrodipteryx vexillarius* is a distinctive, Afrotropical caprimulgid, which is currently treated as congeneric with another Afrotropical species, the Standard-winged Nightjar *Macrodipteryx longipennis* (Fry *et al.* 1988, Cleere 1998, 1999, Holyoak 2001). It is a monotypic species, despite having a breeding range covering much of southern Africa, and its taxonomy contains four synonyms, all of which are over 100 years old. As a result of literature and museum studies, the systematics and taxonomy of the Pennant-winged Nightjar are now reviewed, errors in the nomenclature are corrected and the type material identified and documented.

Generic status

Originally named *Semeïophorus* (*Macrodipteryx*?) *vexillarius,* the species was described with a general structure precisely the same as *Macrodipteryx africanus* Swainson (now = *M. longipennis*), but with the form of the wing very different (Gould 1838). *Cosmetornis* was published as a *nomen novum* by Gray (1840), who considered *Semeïophorus* to have been previously used in herpetology and entomology. The Pennant-winged Nightjar was first considered congeneric with *M. longipennis* by Gray (1846), and then continued by Gray (1848), even though no specimens of it were held in the collections of the British Museum (Natural History) (BMNH, now the Natural History Museum) during that period. Recognition of the genus *Cosmetornis* by subsequent authors then varied, but Hartert (1892) listed the structural differences of the wings of *Macrodipteryx* and *Cosmetornis* in a key and recognised *Cosmetornis* on the basis that the differences between the two genera were so important that they could not be united into one. Four years later, the same author stated that the two genera should again be united, as females of both *M. longipennis* and *C. vexillarius* could not be separated generically (Hartert 1896). *Cosmetornis* was again recognised by Sclater (1924), but Chapin (1939) noted that the generic distinction of *Cosmetornis* from *Macrodipteryx* was based almost entirely on the form of the wing and ornamental quills of the adult males, and that it would be almost as well to unite the two. Separate genera were recognised by Peters (1940), who also showed that the original generic name *Semeïophorus* had not been used before and was therefore an available name ahead of *Cosmetornis*, which was then recognised by Wolters (1976). *M. longipennis* and *M. vexillarius* were considered to be each other's closest relatives by Colston (in Snow 1978), because of their allopatric breeding ranges and similarities in structure and behaviour, but it was also noted that they were too different from each other to be regarded as allospecies, even though they might form a species group. Differences between *longipennis* and *vexillarius* in orbit size, cranial profile and jugal bar flexure of the skull suggested important but unstudied biological differences, which when known, might be grounds for recognising two monotypic genera (Fry 1988). Significant differences between the two were also noted in their body masses, form of 2nd primary, lengths of 3rd to 7th primaries and plumage pattern, but were still treated as congeneric because their differences did not exceed those within the genus *Caprimulgus* (Fry *et al.* 1988). Only *Macrodipteryx* was recognised by Sibley & Monroe (1990). In a more recent study, *M. vexillarius* was found to have a P9 emargination mean of 24.4%, compared to 29.9% in *M. longipennis*, which suggested further support of its recognition in the genus *Semeiophorus* (Jackson 2002).

Nomenclature and type material

Originally given the specific name *vexillarius* (Gould 1838), *vexillaria* was introduced alongside the new generic name *Cosmetornis* by Gray (1840). However, the correct spelling of the specific name was determined to be *vexillarius* (Dowsett & Dowsett-Lemaire 1993), yet even so, some modern authors have continued to name it *vexillaria* (e.g. Fry *et al.* 1988, Elgood *et al.* 1994, Maclean & Whittington 1997, Dean 2000). It has also been proposed that the English name be altered to Pennantwinged Nightjar (Jackson 1993).

Although illustrated and described by Gould (1838), no type was nominated, or subsequently listed by Hartert (1892). A type was later identified by Sclater & Mackworth-Praed (1919) and included by Warren (1966), although its validity has now been examined and rejected by Cleere & Walters (2002).

Synonyms

Cosmetornis burtoni was described from a single specimen deposited in the British Museum (Natural History) that was collected by Captain R. Burton in Fernando Po (Gray 1862). That description was noted by P.L.Sclater (1864), but was overlooked by Hartert (1892), who quoted Gray (1869) as the original reference. In this latter work, the name appeared as a *nomen nudem* and therefore the type status of Captain Burton's specimen was not recognised by either Hartert (1892) or Warren (1966). The specimen, BMNH 1862.11.28.1 adult male, can now be identified as the holotype of *Cosmetornis burtoni.*

Cosmetornis spekei was considered by early authors to have been described and illustrated by P.L.Sclater (1864). However, although a specimen collected by Captain J.H. Speke at Urondogami, north of Lake Nyanza, Uganda was discussed in that work, it was not named, and the accompanying plate by Mr Wolf, of a male Pennant-winged Nightjar, was labelled *Cosmetornis vexillarius.* The first author to publish *Cosmetornis spekei* with P.L.Sclater 1864 as the original citation appears to have been Heuglin (1869), who simply treated it as a synonym of *Macrodipteryx vexillarius.* The name is therefore unavailable under ICZN (1999) Article 11.6, and the specimen discussed by Sclater (1864) has no type status and was not listed by Hartert (1892) or included as a type by Warren (1966). The whereabouts of the specimen collected by Captain Speke is unknown.

Macrodipteryx sperlingi was based on a single bird taken at sea off the Bay of Malimba by Commander R. M. Sperling, and was described as much larger and differently marked on the wings and tail than *M. longipennis* (Sharpe 1873). The specimen, BMNH 1874.5.1.60 adult female, was not listed by Hartert (1892), but was recorded as the holotype by Warren (1966).

Caprimulgus fulleborni was described from a single bird collected by Dr F. Fülleborn in Neu Helgoland, in December 1899 (Reichenow 1900). The holotype is a juvenile and is deposited in the Museum für Naturkunde, Berlin (ZMB), where it is registered as ZMB 49.342.

Discussion

The recognition of separate generic status for the Pennant-winged Nightjar has certainly caused problems for taxonomists and ornithologists. Arguments in favour of the monotypic genus *Semeiophorus* for the Pennant-winged Nightjar have centred mainly on the breeding male, and concern the plumage colouration and markings, the shape of the wing and form of the elongated second primary. Supporters of congeneric status with the Standard-winged Nightjar have noted that these differences are of specific not generic importance and have also put forward the similarities of their breeding biologies, vocalizations and females. In a recent study of two neotropical species considered to be congeneric, the wing shape of the male Sickle-winged Nightjar *Eleothreptus anomalus* was found to be more extreme than that of the male White-winged Nightjar *Eleothreptus candicans*, which had far more white in its plumage (Cleere 2002).

I agree with the view that the Pennant-winged and Standard-winged Nightjars are each other's closest relatives and should be recognised as congeneric. I do not believe that the English name should be changed to Pennantwinged Nightjar.

Synonymy of the Pennant-winged Nightjar *Macrodipteryx vexillarius* (Gould 1838)

Semeïophorus vexillarius Gould, J. 1838, *Icones Avium* Pt. 2, pl 13 & text.

- published as *Semeïophorus* (*Macrodipteryx*?) *vexillarius.*

Type: whereabouts unknown, type locality designated as southern Africa, see Cleere & Walters (2002).

Etymology : (L) *vexillarius*, a standard-bearer. The name refers to the elongated second primaries of the breeding males.

Cosmetornis burtoni Gray, G.R. 1862, *Ann Mag Nat Hist* 3 (10), p. 445.

Holotype: BMNH 1862.11.28.1 adult male collected by Captain R. Burton in Fernando Po.

Etymology : Named after Capt. R. Burton, the collector of the type specimen.

Cosmetornis spekei "P.L.Sclater" Heuglin, T. 1869. *Ornithologie Nordost-Afrika's.* Vol. 1, p. 135.

- published as a synonym of *Macrodipteryx vexillarius* and unavailable under ICZN (1999) Article 11.6.

Etymology: Named after J.H. Speke (1827 - 1864), British explorer.

Macrodipteryx sperlingi Sharpe, R.B. 1873, *Proc. Zool. Soc. Lond.* 1873, p. 626.

Holotype: BMNH 1874.5.1.60 adult female collected by R.M. Sperling at sea off the Bay of Malimba.

Etymology: Named after Commander R.M. Sperling, collector of the type specimen.

Caprimulgus fülleborni Reichenow, A. 1900, *Orn. Monatsb.* 8 (7), p. 98.

Holotype ZMB 49.342 juvenile collected December 1899 by Dr F. Fülleborn in Neu Helgoland (= near Pangambe, Scongea, Tanzania).

Etymology: Named after Dr F. Fülleborn (1866 - 1933), German zoologist and collector of the type specimen.

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A Kenya nest and behavioural notes on the Green-headed Sunbird *Cyanomitra (Nectarinia) verticalis*

by Lester L. Short & Jennifer F.M. Horne

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The Green-headed Sunbird *Cyanomitra (Nectarinia) verticalis* is a reasonably well known (see citations in Fry *et al.* 2000 and Cheke *et al.* 2001) sunbird of diverse elevations in its extensive Afrotropical range. Small numbers of the eastern race *viridisplendens* are resident and a pair and their young are regular attendants at 5-7 sugar-water feeders at our 8 ha property, maintained as a wildlife refuge northeast of Nanyuki at 1,950 m, Kenya (0°02'N, 37°14'E). The habitat here is mixed with upland forest adjacent to the Nanyuki River, bordered to the east by dense thickets and secondary woodland, and still further east and slightly higher, a mixture of degraded *Acacia drepanolobium* grassland and patches of degraded dry *Juniperus-Olea-Euclea* woodland and bushland. At least one pair of Green-headed Sunbirds nested in January-February 2001; recent fledglings were seen mid-July into August 2001; an adult male accompanied two recent fledglings (with gape wattles) to the feeders in mid-January 2002, and another fledgling with male and female was there October-November 2002. Rainfall, usually tri-seasonal about Nanyuki (Brown & Britton 1980), was above average for the area in both years, and exceptional in January 2001, and very heavy in October-November of 2001 and 2002; rainfall for 2001 was 987 mm at the house, while the Nanyuki yearly mean is 688 mm, and the 5 years 1997-2001 saw extremes of 398 mm in 2000 and 1,597 mm in 1997). Like most birds of this region the Green-headed Sunbird breeds during and just after the rains when insects and nectar are available.

Ecology and behaviour

In our area this sunbird appears to be territorial and resident. We once observed two males near our feeders but one was chased away immediately. On their approach to the feeders they occasionally hawked insects. Sunbirds came from woods below the house to inside and outside two verandas, rarely passing en route to feed at nearby flowering *Aloe* sp. and *Leonotis* sp. or to take insects. (The house is in open woodland and thickets, with thickets near bird feeders, scattered trees and various small-garden flowering plants, many known to be utilised by sunbirds). Most sightings of Green-headed Sunbirds away from feeders were in the riverine woodland, including forest and secondary growth, adjacent clearings, paths and a 0.2 ha vegetable garden, in which 12 banana *Musa acuminata* trees especially attracted them. They fed on nectar of banana flowers and upon insects attracted to the flowers and fruits. All nectar-foraging was direct, from the front of the flowers (Dowsett-Lemaire 1989, 1990), but they were difficult to observe in forest, as they were usually silent and foraged out of sight in the understorey and canopy vegetation. Members of a pair frequently foraged together, including at the nectar-feeders. About feeders the Green-headed was dominant over the regular attendant sunbirds (Scarlet-chested *Chalcomitra (Nectarinia) senegalensis*, Amethyst *C. amethystina*, Tacazze *Nectarinia tacazze*, an individual female Bronze *N. kilimensis*, and Variable *Cinnyris* (*Nectarinia*) *venusta*), apart from fully-plumaged adult male Tacazze, a few female Tacazze and most female Bronze sunbirds.

At the feeders behaviour differed from that of the other sunbirds. The Green-headed Sunbird was more placid and did not beat its wings and hop about the feeders with its body horizontal. Rather, when other sunbirds were at the feeder, it landed in an upright pose, head nearly vertical, appearing as if held upward by its bill; the head and throat feathers were smoothed and the bill maintained at 40°- 80°above the horizontal. The male also spread feathers of the sides of the neck, nape and upper back, which appeared laterally ruffled and shaggy. The female, lacking the iridescent throat colour, employed a less vertical posture during encounters, from which it was usually quicker to flee than was the male. From its bill-up position the male faced off against any prospective aggressor, poised to direct a strong forward and downward thrust with its bill at any overt aggression toward it. Indeed, the male Green-headed Sunbird often simply held its upright posture and maintained its position at the feeder as other sunbirds flew about it chasing one another, or attempted to supplant the Green-headed Sunbird. The hundreds of these displays seen over 5 years were of interspecific encounters; aggressive intraspecific behaviour may differ. Brosset & Erard (1986) described very different aggressive displays, with numerous males of a different race (either the nominate race or *C.v. bohndorffi*) defending sections of a flowering tree in Gabon, with males raising the tail and pointing the bill at an opponent, pectoral tufts flared. It would be rewarding to determine the frequency of occurrence of the "head-up" posture in these other races. It is certainly characteristic of the Nanyuki Green-headed Sunbirds, and often allows a male to hold its place and feed, even amid the turmoil involving interactions among 12 to 15 sunbirds of several species all about it. Noteworthy are the facts that we rarely glimpsed the edge of a male's pectoral tuft and the tufts were not used in displays.

Male Green-headed Sunbirds often accompanied their recent fledglings in visits to the feeder, and under such circumstances became feeder tyrants, attacking and driving away any sunbird approaching the feeder occupied by the male and one or two of its young. The female sometimes accompanied one young to the feeders, but attempted to defend only a feeding site at one feeder (the nectar-feeders have one to six feeding holes or sites). Immature Green-headed Sunbirds coming on their own to the feeders (at about 2 weeks post-fledging) did not display, but seized a feeding site and commenced feeding. A feeding youngster might poke its bill at any sunbird pressing it. Indeed these immatures were able to hold their own against Amethyst, Variable and some Scarlet-chested Sunbirds, but gave way to some adult and aggressive, newly-fledged young Scarlet-chested Sunbirds, as well as to all Tacazze and Bronze Sunbirds.

The song of this race was discussed by Cheke *et al.* (2001; see also Zimmerman *et al.* 1996). As adults arrive at a nectar-feeder they utter a "t'chew-ee, t'chew-ee", softer than similar calls of the Bronze Sunbird, and harsher; usually they are not repeated in series beyond 2 such single or double notes. Immatures call "cha-wi, cha-wi" in the same circumstances. Another aggressive call is a sharp "chep-pee-pee-pee-pee-pee" that may go into a song-like trill "–tee-tee-tee-". In giving the "head-up" display posture males simultaneously call "peeeeee-tew", rising in pitch, then falling on the -"tew". These do not precisely match calls described in the literature (see Fry *et al.* 2000, Cheke *et al.* 2001).

Nest and immatures

A nest was discovered by Stephen Njagi in early February 2001; adults were feeding young on 12 February, the food including crane-flies (Tipulidae). Two young fledged by 15 February, so nesting began in the previous very wet January. We collected the nest on 18 February and later analysed its structure.

Possibly the same pair escorted two newly fledged young to our feeders on 9 July 2001 (nesting in June after substantial April-May rains); these young fed alone at feeders by 20 July and were seen into early August. A male and female escorted two recently fledged juveniles to the feeders on 19 January 2002; this nesting occurred after unusually heavy October-November rains, during December and into dry January. In this tri-seasonal rainfall area of Kenya (Region D, in part, of Brown & Britton 1980), rains are usually substantial in April-May, less heavy but more regular in July-August, and generally less intense in October-November. Our records suggest that this sunbird may breed following any significant rainfall and at least twice a year in favourable years.

The nest was located in a small open area amid dense secondary woodland 12 m from our vegetable garden fence and 3 m from a path, but not readily visible from it. The nest was in a gangling, thin-branched *Mystroxylon aethiopicum* (Celastraceae) tree 7 m tall, near the end of a drooping 2 mm thick branchlet. Six leaves of this tree were bound into the base of the nest. The nest was 1.5 m above ground, hanging in the open with no vegetation within 1.5 m of it on all sides. Its dimensions were: total height from attachment to the tip of long, hanging reeds and banana fibres, 67.5 cm; height of basic nest to start of hanging "beard", 27 cm; outside diameter across roof over entrance, 14 cm, and nest diameter at entrance hole, 11.5 cm; diameter of tightly woven inner nest 7.5 cm; and entrance diameter 3.5 cm wide and 4.5 cm high. The structure itself was in four quite discrete parts: (i) the outer nest comprised of coarse, hanging material (bark fibres, including banana; stripped reed leaves), mainly < 20 cm, but some were 35-50 cm long and < 18 mm wide; (ii) firmly attached to this and mainly forming the back of the nest, was a more tightly bound structure of coarse grasses, vine stems, banana bark fibres, dry reeds to < 1 cm wide, and three fine black cotton threads (garden netting) < 28 cm long; (iii) a tightly bound grass and fibre roof piece was well-bound to the top of the first part, to the second part at its rear, and to the inner nest below; (iv) the inner nest was a tightly bound, neat structure of very fine plant fibres and down (pappus), well woven, and attached to the roof and the outer nest. Other than the cotton threads, the building materials within and between elements of the four structures were spirally curled longer or shorter pieces of garden squash *Cucurbita* sp. and of the cucurbit *Zehneria scabra*. These multi-coiled tendrils, twisted through and about the various nest components, held their shape well when dried.

We found no cobwebs in the nest. Jackson, in Jackson & Sclater (1938:1356), noted that this sunbird weaves its nest "without the aid of either cobwebs, cocoon silk or vegetable lint". Spider webbing was not mentioned for this species' nests by Mackworth-Praed & Grant (1960) or Fry *et al.* (2000), nor in nests of the closely allied *C. bannermani* (Fry *et al.* 2000, Cheke *et al.* 2001). Cheke *et al.* (2001:214) erred by writing "with" instead of "without" in stating that *C. verticalis viridisplendens* has its nest "woven with cobwebs, cocoon silk or vegetable lint" (R.A. Cheke, *in litt.*).

The immature plumage changes rapidly after fledging, probably accounting for variation in immature males illustrated by Zimmerman *et al.* (1996), Cheke *et al.* (2001) and Stevenson & Fanshawe (2001). Newly fledged juveniles of both sexes have a creamy-yellow gape and a grey-black throat (best shown by Cheke *et al.* 2001, plate 21). Within two weeks the gape pales to cream-coloured and the yellow breast patch becomes olive-yellow, much like the belly. In this period the throat may become blacker in young males but we have had difficulty sexing immatures up to three weeks after fledging, by which time they visit the feeders unaccompanied by a parent. At *c.* 6 weeks post-fledging the adult head pattern begins to appear and the sexes then can be distinguished.

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Buteo polyosoma and *Buteo poecilochrous* are two distinct species

by Jose Cabot & Tjitte de Vries

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The Red-backed Hawk *Buteo polyosoma* Quoy and Gaimard 1824 occurs from southwest Colombia south to the southern Andes, together with the Pampa region of Argentina, Patagonia, Tierra del Fuego and the Falkland and Juan Fernandez Islands. Southern birds migrate to the lowlands of northern and central Argentina, eastern Bolivia, Uruguay, Paraguay, the Mato Grosso and southern Brazil in winter (Schubart *et al.* 1965, Contreras *et al.* 1990, Fjeldså & Krabbe 1990, Cabot & Serrano 1988). Cabot (1988, 1991) reported the occurrence of wintering individuals in the Bolivian Altiplano. It occurs from sea-level to 4,500 m.

The Puna Hawk *Buteo poecilochrous* Gurney 1879 inhabits rocky regions and cliffs in rugged paramo and puna terrain, rocky Andean ridges and Altiplano from Colombia to northern Argentina and Chile. It is sedentary and occurs between 3,000 and 5,500 m (Lehmann 1945, Dorst 1954, Solís & Black 1985, Fjeldså & Krabbe 1990, Cabot 1988).

B. polyosoma and *B. poecilochrous* are considered to be closely related to one another, and to other hawks such as the White-tailed Hawk *B. albicaudatus*, Galapagos Hawk *B. galapagoensis* and Swainson's Hawk *B. swainsoni* (Brown & Amadon 1968, de Vries 1973, Voous & de Vries 1978). The separation of *B. poecilochrous* and *B. polyosoma* was based exclusively on external characteristics (Stresemann 1925, Chapman 1926, Hellmayr 1932, Vaurie 1962, de Vries 1973), although the small difference in size between the two taxa, their polymorphic plumages with some patterns virtually duplicated, and their partial range overlap has fuelled a long debate over their exact taxonomic identity. Nevertheless, most authors still recognise *B. polyosoma* and *B. poecilochrous* as two distinct species.

Farquhar (1998), on the other hand, concluded that *B. polyosoma* and *B. poecilochrous* are conspecific and should be regarded as one species, namely *Buteo polyosoma*. This author argued that the morphological differences are due to clinal and altitudinal variation in size and body mass, and also used plumage and voice characteristics to support his proposal.

In this study we demonstrate that *B. polyosoma* and *B. poecilochrous* are separate species, with different morphology and body size, on the basis of an analysis of the external measurements of skins and of live birds. The two phenotypes are identifiable in the hand by a range of body measurements. We also demonstrate that there is no inter-gradation or clinal gradient between the two entities; where the two taxa occur in the same altitudinal range in the high Central Andean region, morphological differences are maintained. Furthermore, Stresemann's key for separating the two species, based on the differences in the wing formula (the third outermost primary, P8, is constantly longer than fifth, P6, in *polyosoma*, the reverse being true in *poecilochrous*) is re-evaluated. We examine the effects of using wrongly identified, wrongly sexed or unsexed birds on taxonomic decisions regarding the two taxa. We re-analyse Farquhar's work, using his material and methods, and re-assess his results and conclusions. All this, together with ecological and behavioural factors, leads us to conclude that the original status of full species should be assigned to each of the two taxa, in accordance with the biological species concept.

Material & methods

We examined 118 skins of both taxa held at the Natural History Museum, Tring; Zoologisk Museum, Copenhagen; Museo Regionale di Science Naturali, Torino; Institut Royal des Sciences Naturelles de Belgique; Museum national D´Histoire naturelle, Paris; Estación Biológica de Doñana, Sevilla; and Museo Nacional de Ciencias Naturales, Madrid. Study skins of *polyosoma* were from Ecuador (1), Peru (13), Bolivia (17), Argentina (16), Chile (23), the Falkland Islands (2) and of unknown origin (2), while those of *poecilochrous* were from Ecuador (6), Peru (14), Bolivia (17), Argentina (1), Chile (3) and of unknown origin (3).

Controversial and undated skins were identified and sexed on the basis of the length of the secondaries, wing width, wing depth and the shape of the wing tips, according to the range of values given by de Vries (1973) and Cabot (1991). Additionally, 16 live birds from Peru (11 *B. polyosoma* and 5 *B. poecilochrous*), in private zoos and hawking centres, were examined.

Measurements

Comparison of the two species was based on the following measurements (with an emphasis on those related to wing shape) of museum skins: mass obtained from data on label; culmen from cere; culmen from base, from the tip of the bill to the angle at the front of the skull; cranial width (post-orbital); length of the cubito-radius; tarsus; inner toe, middle toe, outer toe and hind toe; inner claw, middle claw, outer claw and hind claw (all measurements taken with a calliper to the nearest 0.01 mm). Wing length; length of emargination and notch of the five outermost primaries (P6, P7, P8, P9, P10), from the beginning of the feature to the tip; consecutive distances between the tips of the five outermost primaries (P9-P10, P8-P9, P7-P8, P6-P7) and the width of the free fingers of the three outermost primaries at the point where both emargination and notch start to coincide (Fig. 1). Wing length and feather lengths: alula, outermost primary (P10), the outermost and innermost secondaries were measured at their maximum length (straightened and flattened against a ruler to the nearest 0.5 mm). Tail and feathers were measured (nearest 1mm) from their base at skin insertion to their distal extreme.

The data taken from live birds were as follows: (a) body mass (g) using a digital balance; (b) gender determined by body measurement (de Vries 1973), and by the use of a molecular technique (Ellegren 1996) (all results coincided for all individuals); (c) wing-span (mm) using a measuring tape – two helpers held birds face up with

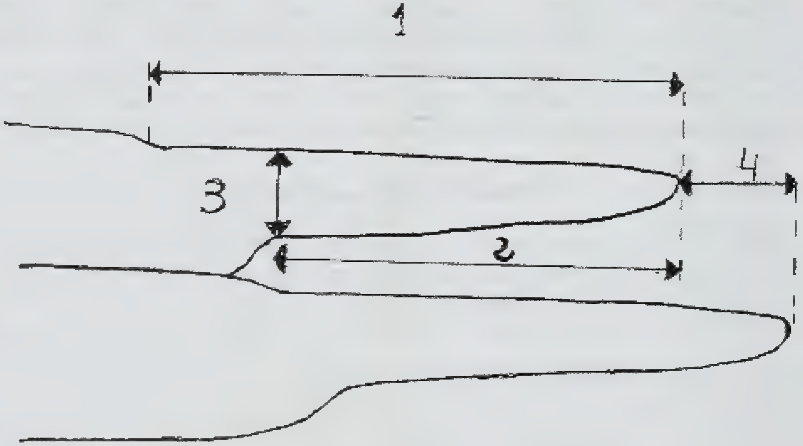

Figure 1. Sketch of primary feathers to indicate measurements taken. Emargination length (1), notch length (2), width of tip (3) and distance between consecutives tips (4)

their wings fully extended; (d) wing width (mm) from the anterior margin at the carpal articulation to the tip of the secondaries with the wing spread; and (e) wing area (cm^2) calculated from the outline of the open wing drawn on millimetre-squared paper, and then multiplied by two to give the area of both wings together. We had no access to live male *poecilochrous* and so the wing area was estimated using museum specimens, which were moistened and prepared with their wings fully extended.

Statistical analysis

To seek morphological differences between *polyosoma* and *poecilochrous* we used a stepwise discriminant analysis (Pimentel & Frey 1978). This option gives pooled within-group correlations of variables showing the respective discriminant (canonical) functions. This allows the user to produce a scatter plot of the canonical scores for pairs of discriminant functions (canonical roots) which permits determination of the contribution of each discriminant function to the discrimination between groups. The analysis, using 19 morphometric variables, was applied to four different groups: the males and females of both taxa. Birds were allocated to these categories on the basis of their measurements, without taking into account differences in plumage. The wide range of body measurements used in the analysis allows us to determine objectively which is the most important in separating the four groups. Only 62 birds were used in the analyses, as some were excluded because of missing measurements. The following lengths were used as variables: culmen from the base, tarsus, cubito-radius, wing length, length of P10, notch of P10, emargination and notch of P9 and P8, notch of P7, innermost and outermost secondary lengths, finger width of P10, P9 and P8 (at the point where both emargination and notch coincide) and tail. In graphical presentation, the position of the individual birds is determined by the two most important canonical variables.

The Mahalanobis distance is a classification derived from the discriminate which measures the affinity between elements classified in a multidimensional space. In this case, birds were positioned in accordance with their body measurements. The Mahalanobis distance is measured in terms of standard deviations from the mean of the training samples; the reported matching values give a statistical measure of how well the spectrum of the unknown sample matches (or does not match) the original training spectra. This allows us to measure standard distances between the centroids of a cluster based on the dispersion its components. These distances are similar to the squared Euclidean distances of the respective case from the centroids for each group (the point defined by the means for all variables in the respective group). However, unlike the Euclidean distance, the Mahalanobis distance takes into account the inter-correlations between the variables in the model (which define the multivariate space).

Additionally, pooled data of sexes and taxa were reclassified using a principal components analysis (PCA) (Frey & Pimentel 1978). This analysis allowed us to evaluate the extent to which different body measurements were associated with sex and taxa. We used 18 body measurements: culmen from base, tarsus, cubito-radio, wing length, length of P10, the distance between the tips of the primaries P10-P9, P9-P8, P8-P7, P7-P6, notches P10, P9, P8, emarginations P9, P8 and P7, outermost secondary length, width of tip P9 and P10. N = 50; birds with missing data were excluded. Briefly, the PCA generates new variables (principal components), based on correlations among the original variables (body measurements), and identifies each individual bird in relation to them. The interpretation of the principal components relies on the factor loadings of the original variables, which are the correlations between the respective variables and components. If there is any consistent pattern of variation associated with sex in both species, this will show up in a plot of the individual scores on the principal components.

The non-parametric Mann-Whitney test (Siegel 1956) was used for independent samples to discover whether differences existed between the two species in wing projection or in the fraction in which the primaries surpass the secondaries in the total wing length when folded. Twenty birds of each species were used without distinction in sex or age.

Another discriminant analysis was used to test whether *polyosoma* and *poecilochrous* maintain the same morphological differences when they coexist at high altitudes in the same region, as well as to determine whether *polyosoma* exhibits geographical variations. The analysis was applied to migrant female *polyosoma* from the Altiplano, to female *polyosoma* from the extreme south of their range, and to female *poecilochrous* from the Altiplano. We were unable to carry out this analysis for males due to the small sample size for *poecilochrous* males from the Altiplano. In this analysis we used the following variables: culmen from base, culmen from cere, cubito-radius, wing length, alula, emargination and notch of P9 and P8, emargination of P7, inner and outer secondary length and basal width of the finger of P9.

Results

Morphometrics

The stepwise discriminant analysis (males and females of each taxon) showed that each of the four groups is separable from the others (Fig. 2), (ANOVA, $F_{30,109} = 14.30$, $p<0.001$). The length of the outermost secondary, culmen from base, wing length, cubito-radius, notch of P10 and P8 are the body measurements which contributed significantly in the discriminant function.

Males and females of the same species were more similar than the same sexes of distinct species. The Mahalanobis distance showed that the sexes of each species resemble each other more than they resemble other clusters: between sexes for *B. polyosoma* the distance is 23.6 and for *B. poecilochrous* 34.1; *B. polyosoma* females differ by 46.6 from *B. poecilochrous* males and by 80.3 from *B. poecilochrous* females, while *B. polyosoma* males differ from *B. poecilochrous* males by 83.8.

Based on morphology, multivariate factorial principal components analysis showed four well-defined and separate groups of birds (Fig. 3). Each group

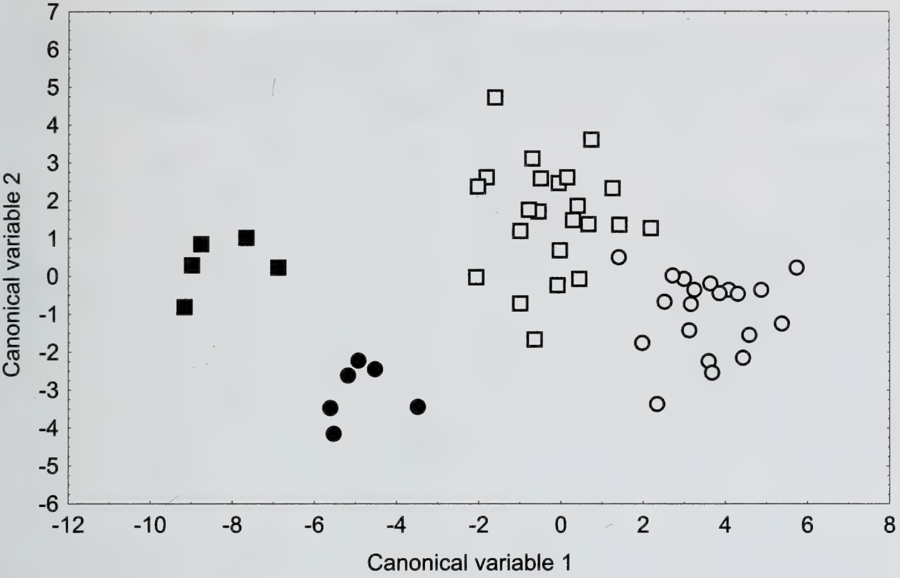

Figure 2. Stepwise discriminant analysis based on 19 morphometric measurements of *B. polyosoma*, males, (○) and females (□), and *B. poecilochrous* males, (●) and females (■). N = 62.

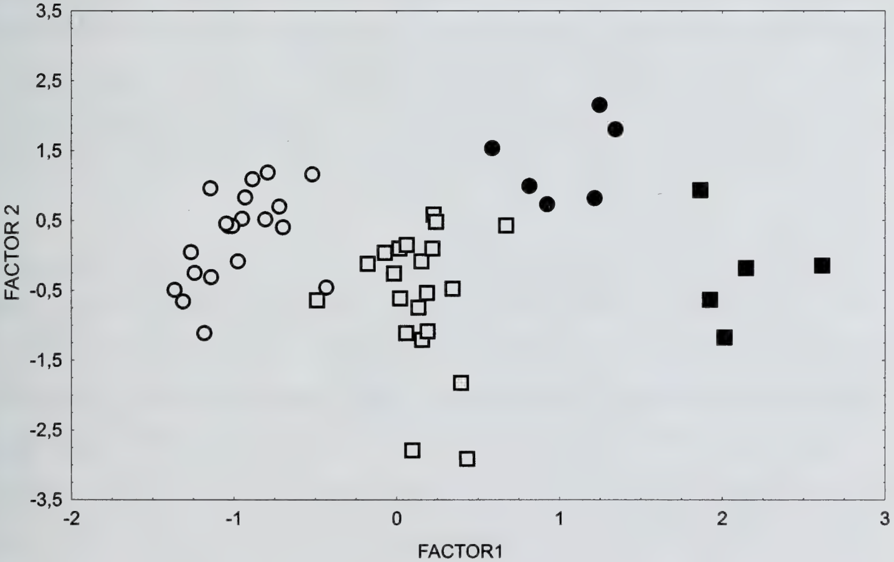

Figure 3. Clusters established by means of a principal components analysis based on 18 morphometric measurements, N = 51. Symbols as Fig. 2.

TABLE 1
Measurements used in the principal components analysis with significant factor loadings ($p < 0.07$).

Measurements	Factor 1	Factor 2
Cubito-radius	0.86*	-2.53
Wing length	0.95*	-1.18
Length P10	0.89*	0.11
Distance from P10 to P9	0.70*	-0.15
Distance from P9 to P8	0.37	0.78*
Inner notch length P10	0.86*	0.13
Emargination length P9	0.93*	-0.02
Inner notch length P9	0.91*	0.11
Emargination length P8	0.89*	-0.07
Inner notch length P8	0.91*	-0.04
Emargination length P7	0.86*	0.02
Width tip P9	0.83*	0.23
Width tip P8	0.85*	0.13

corresponds to one sex of the two taxa under study. Females generally showed negative values with regard to factor 2 and occupied lower positions than males which, on the other hand, tended to show positive values on the same axis. The sexes of each species formed clearly separated clusters; the most influential measurements are shown in Table 1. Average values and the ranges of measurements show that *B. poecilochrous* is bigger than *B. polyosoma*, with significant differences in most parameters, both between taxa and sexes (Table 2).

B. poecilochrous males are slightly larger than *B. polyosoma* females, although there is extensive overlap of values. Wing lengths of birds of the same sex do not overlap in different taxa (Fig. 4). Neither male nor female *B. polyosoma* ever possess the wingspan or wing width of *B. poecilochrous*.

Wing shape, silhouette and wing loading

In relation to wing span and tail length *B. polyosoma* has a somewhat narrower wing than *B. poecilochrous* (Table 3). It also has longer wings compared to wing width, the alula and the outermost primary. Compared to *B. polyosoma*, *B. poecilochrous* has a proportionately longer distance from the base of the humerus to the carpal joint and a shorter distance from the base of the humerus to the wing tip, according to the ratios of wingspan and the length of the cubito-radius to wing length.

Compared to the maximum length of the outspread wing, the wing of *B. poecilochrous* is 17% wider than in *B. polyosoma.* This percentage was obtained from the outline drawing of the wings of live birds. *B. polyosoma* has greater wing projection than *B. poecilochrous* (Mann-Whitney test $Z = 3.97$, $p<0.001$). In the former, the primaries surpass the secondaries in the folded wing by 33.7%, when compared to the total wing length, while in the latter the value is 39.8%. De Vries

TABLE 2

Means and range of measurements of *B. polyosoma* and *B. poecilochrous* males and females. Mass (g), lengths (mm) and surface area (cm^2). Levels of significance * = p<0.01 and ** p<0,001 (ANOVA) are shown between species (column A), sexes (column B) and interaction (column C)

	B. polyosoma						*B. poecilochrous*								
	Males			Females			Males			Females					
	N	$\bar{x}$	Range	N	$\bar{x}$	Range	N	$\bar{x}$	Range	N	$\bar{x}$	Range	A	B	C
Mass	16	695,5	(501 – 822)	4	880	(790 – 980)	8	840	(700 - 950)	12	1168	(1010 - 1280)	**	**	*
Culmen	31	21,9	(19,9 - 23,6)	31	24,4	(22,2 - 27,9)	10	22,8	(19,9 - 25,3)	12	25,4	(23,1 - 27,5)	**	**	—
Culmen from base	32	32,9	(29,8 - 36,1)	36	36,4	(33,4 - 39,7)	14	34,5	(32,1 - 37,9)	13	38,1	(35,7 - 40,3)	**	**	—
Cranial width	27	45,9	(42,3 - 55,3)	27	49,2	(44,6 - 52,3)	7	47,9	(44,7 - 50)	10	49,4	(46,5 - 50,9)	—	**	—
Tarsus	35	85,2	(78,8 - 96,9)	41	90,3	(80,0 - 102,1)	17	92,2	(86,4 - 103,7)	23	96,8	(89,1 - 109)	**	**	—
Inner toe	33	18,7	(15,2 - 23,4)	31	19,6	(16,7 - 21,8)	16	20,3	(19,1 - 22,1)	17	22,2	(19,6 - 25,5)	**	**	—
Middle toe	33	29,7	(25,5 - 33,6)	31	32,1	(25,4 - 36,3)	16	33,5	(31,7 - 35,1)	17	36,2	(33,7 - 38,7)	**	**	—
Outer toe	33	21,2	(17,4 - 24,9)	31	23,4	(20,3 – 26)	16	23,6	(21,3 - 26,5)	16	25,4	(24,1 - 27,1)	**	**	—
Hind toe	34	21,1	(17,9 - 23,7)	31	22,9	(20,4 - 25,8)	16	23,6	(21,4 - 25,9)	17	25,3	(22,8 - 27,4)	—	**	—
Inner claw	28	22,1	(20,7 - 23,5)	30	24,5	(20,7 - 28,9)	15	24,7	(22,5 - 27,5)	16	27,3	(25,3 - 29)	**	**	—
Middle claw	26	18,7	(17,4 - 20,3)	29	20,9	(18,8 - 24,1)	15	20,6	(17,9 - 22,6)	15	22,2	(20,7 - 23,4)	**	**	—
Outer claw	25	14,8	(13,8 - 16,2)	27	16,2	(13,9 - 18,2)	15	16,5	(14,5 - 17,8)	16	18	(16,7 - 19,3)	**	**	—
Hind claw	25	22,6	(20,1 - 24,3)	24	25,9	(23,3 - 29,8)	14	24,8	(22,4 - 27)	17	27,8	(25,4 - 29,3)	**	**	—
Wing span	8	1126	(1050 – 1150)	3	1213	(1180 – 1260)	2	1307	(1305 - 1310)	7	1474	(1390 - 1490)	**	**	—
Wing length	36	370,2	(342 – 386)	41	406,8	(387 – 446)	17	425,4	(402 - 444)	23	464,3	(450 – 490)	**	**	—
Wing width	7	227,5	(215 – 235)	2	252,5	(250 – 255)	2	272	(270 - 275)	5	309	(305 – 310)	**	**	—
Cubito-radius	33	120	(109 - 128,5)	36	135,7	(121,4 - 149)	13	137,2	(130 - 143,5)	16	146,3	(136,3 - 156)	**	**	*
Alula	34	98,9	(85 – 113)	41	108,5	(98 – 119)	15	117,9	(104 - 126)	22	125,5	(118 – 136)	**	**	—
Length P10	32	173,4	(157 – 192)	40	191,5	(178 – 211)	17	205,4	(183 - 231)	20	219,3	(205 – 232)	**	**	—
Notch P10	34	78,2	(70 – 87)	39	88	(76 – 101)	17	92,7	(81 - 107)	20	101,1	(92 - 117)	**	**	—
Emargination P9	33	154	(140 – 167)	39	166,6	(132 – 193)	17	176,9	(165 - 192)	22	188,9	(179 - 207)	**	**	—
Notch P9	33	92,4	(84 – 106)	39	101,9	(92 – 120)	17	109,3	(96 - 122)	22	118,9	(109 – 131)	**	**	—
Emargination P8	33	130,5	(115 – 147)	39	140,2	(126 – 160)	17	147,9	(134 - 159)	22	160,7	(153 – 170)	**	**	—
Notch P8	33	92,9	(82 – 105)	38	101,5	(91 – 118)	17	112,1	(104 - 125)	21	119,3	(112 – 126)	**	**	—
Emargination P7	33	100	(90 – 113)	38	107,7	(93 – 132)	15	116,5	(100 - 128)	21	130,9	(119 – 142)	**	**	—
Inner Secondary	35	186,4	(154 – 203)	40	205,8	(186 – 231)	17	233	(215 - 248)	23	250,4	(222 – 273)	**	**	—
Outer Secondary	34	155,4	(128 – 174)	40	162,8	(140 – 192)	17	197,4	(182 - 225)	23	204,2	(180 – 229)	**	**	—
Width tip P10	31	18	(13,5 – 21)	39	19,4	(17 – 22)	15	21,6	(19,5 - 24)	18	23,9	(21 - 27)	**	**	—
Width tip P9	31	20,2	(17 - 22,5)	39	22,1	(19 – 26)	14	24,4	(23 - 26)	20	26,4	(23 - 29)	**	**	—
Width tip P8	30	21,2	(18 – 24)	36	23,4	(19,5 – 27)	14	26,2	(24 - 28)	19	28,8	(23 - 32)	**	**	—
P10-P9	32	71,3	(62 – 90)	39	74,8	(65 – 88)	17	77,2	(67 - 85)	18	85,7	(79 - 97)	**	**	*
P9-P8	32	28,9	(21 – 37)	39	31,8	(22 – 47)	16	35	(26 - 58)	20	38,7	(29 - 47)	**	**	—
P8-P7	32	1,9	(-7 – 10)	35	1,9	(-8 – 11)	14	4,6	(-6 - 11)	21	7	(-3 - 19)	**	—	—
P7-P6	31	-13,5	(-30 – 21)	37	-16,1	(-32 – 5)	14	-4,7	(-10 - 3)	17	-6,8	(-17 - -1)	**	—	—
Tail	35	188,4	(168 – 223)	41	209,5	(176 – 240)	17	215,9	(190 - 238)	23	238,9	(215 - 276)	**	**	—
Wing area	6	2097	1972 – 2171	2	2448	2440 – 2454	2	2689	2667 - 2710	5	3431	3263 – 3533	**	**	*

(1973) also noted this fact when applied to wing depth, i.e. the distance from the tip of the innermost primary to the tip of the longest primary, in proportion to wing length.

The outline of the wing tip is more rounded in *B. poecilochrous* than in *B. polyosoma* (Fig. 5), the outermost primary P10 being relatively long and the rest of the outermost primary tips more equal in length (especially P6 and P7). All this produces a rather wide wing shape with a shorter and blunter wing tip. Furthermore, the alula is somewhat longer in *B. poecilochrous* than in *B. polyosoma*.

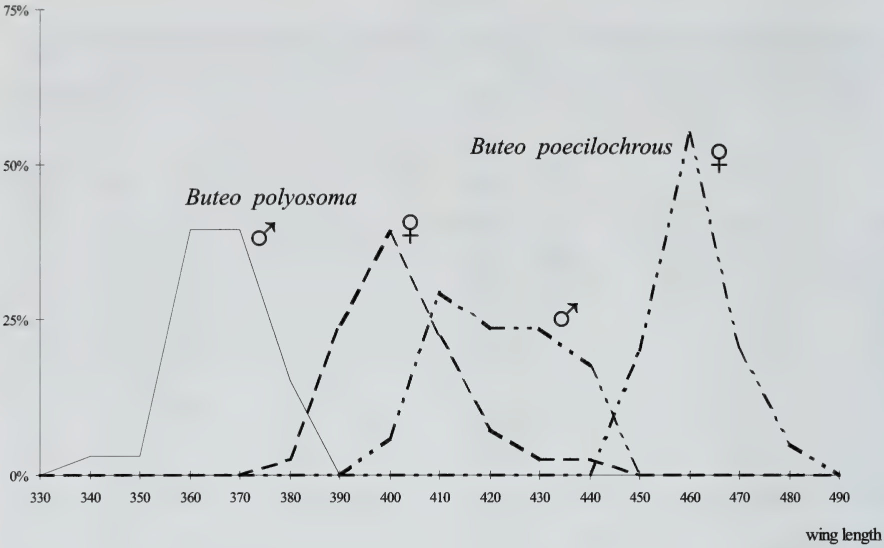

Figure 4. Distribution of wing length (mm) in 118 specimens of *B. polyosoma* and *B. poecilochrous*

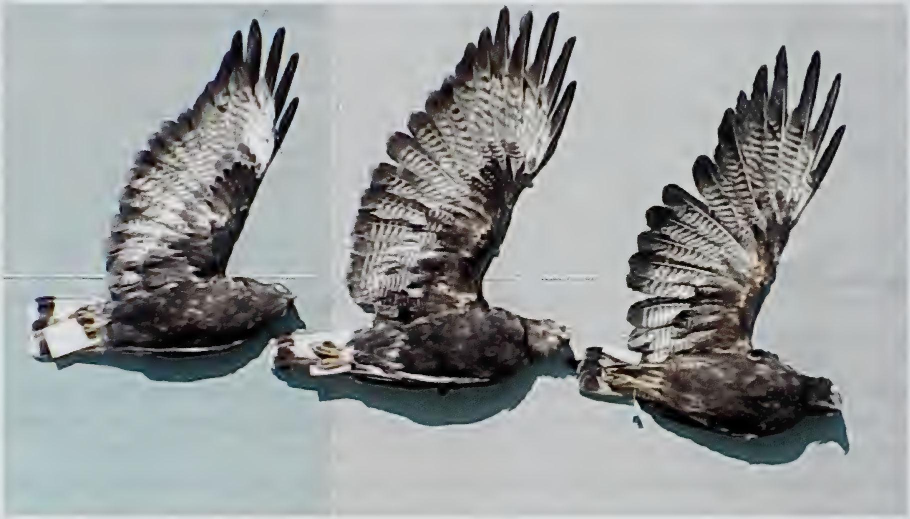

Figure 5. From left to right: darker males of *B. polyosoma, B. poecilochrous* and *B. albicaudatus*. Specimens from the collection of the Estación Biológica de Doñana. Photograph by Benjamín Busto.

TABLE 3

Ratios in some wing parameters in male and female *B. polyosoma* and *B. poecilochrous*. LP10 = length of primary 10.

	B. polyosoma						*B. poecilochrous*					
	Male			Female			Male			Female		
	n	$\bar{x}$	s.d.	n	$\bar{x}$	s.d.	n	$\bar{x}$	s.d.	n	$\bar{x}$	s.d.
Wing span / wing width	8	5.06	0.03	2	4.91	0.16	2	4.80	0.07	5	4.40	0.05
Wing length / wing width	8	1.64	0.09	2	1.61	0.01	2	1.56	0.03	5	1.49	0.03
Cubito- radius / wing length	31	0.32	0.11	36	0.33	0.14	13	0.32	0.16	14	0.47	0.10
Wing span / wing length	10	3.00	0.12	3	2.98	0.09	2	3.10	0.01	7	3.20	0.08
LP10 / cubito- radius	33	1.45	0.07	36	1.41	0.08	13	1.49	0.09	14	1.51	0.05
Wing length / LP10	28	2.13	0.84	34	2.13	0.82	17	2.03	0.12	17	2.11	0.69
Wing length / alula	33	3.76	0.24	35	3.75	0.20	15	3.62	0.21	19	3.70	0.14
LP10/ alula	31	1.75	0.14	40	1.76	0.11	15	1.74	0.88	17	1.74	0.08
Wing width / tail	8	1.20	013	2	1.20	0.01	2	1.38	0.05	5	1.31	0.05

TABLE 4

Standard and linearised values of wing loading in *B. polyosoma* and *B. poecilochrous*. S = Wing area (cm^2) ; W = Body mass (g).

	B. polyosoma		*B. poecilochrous*	
Coefficient	Male	Female	Male	Female
S/W	3.01	2.78	3.20	2.94
$\sqrt{S}/\sqrt[3]{W}$	5.17	5.50	5.50	5.56

The wing in *B poecilochrous* is similar to that of *B. albicaudatus* in width and in the pattern of internal markings, although it differs inasmuch as its innermost primaries are somewhat longer and its outermost primaries are shorter; the opposite is true for *B. albicaudatus* (de Vries, 1973). In relation to wingspan and wing width, the tail of *B. poecilochrous* is proportionally shorter than that of *B. polyosoma*.

B. polyosoma has a larger wing loading than *B. poecilochrous* (Table 4). At equal body mass, male and female *B. polyosoma* have 5% and 5.5% less surface area (both wings) respectively than the same sexes of *B. poecilochrous*. In both taxa males have lower wing loadings than their respective females.

Buteo polyosoma *of the Altiplano*

B. polyosoma occurs above 3,500 m during the austral winter in the high Andean region of Bolivia, sharing its altitudinal range, but not habitat, with *B. poecilochrous* (Cabot 1991). A stepwise discriminant analysis with 12 body measurements was applied to female *B. polyosoma* and *B. poecilochrous* from the central Andean highlands and to *B. polyosoma* from the extreme south of its range. The two groups of *B. polyosoma* had more in common with each other than with *B. poecilochrous* (Fig. 6). The difference between the groups is significant (ANOVA, $F_{24,22} = 19.76$, $p<0.001$). The statistically significant body measurements that contributed to the discriminant function were the length of the inner and outermost secondaries, the cubito-radius, the culmen from base measurement, the emargination of P9 and the length of the innermost secondary. The *B. polyosoma* from the Altiplano seemed to be slightly smaller than those from the far south of their range in Chile, in the Rio Negro, Patagonia and Tierra del Fuego in Argentina, and the Falkland Islands (Table 5).

Analysis of Stresemann's criterion

Stresemann (1925) argued that in *B. poecilochrous* the fifth outermost primary (P6) is longer than the third (P8), and that the reverse pertains in *B. polyosoma*.

Our results show that in *B. poecilochrous* differences between the tip distance P6-P7 are similar to the P7-P8 distance (Table 2), and show an average difference of 0.1 mm in males and 0.3 mm in females. A small amount of differential weathering between feathers and/or a minimum of natural difference may explain this disparity, present even in the two wings of the same individual. Of the specimens of *B. poecilochrous* examined in this study, 45.4% of females (n = 11) had P6 (fifth)

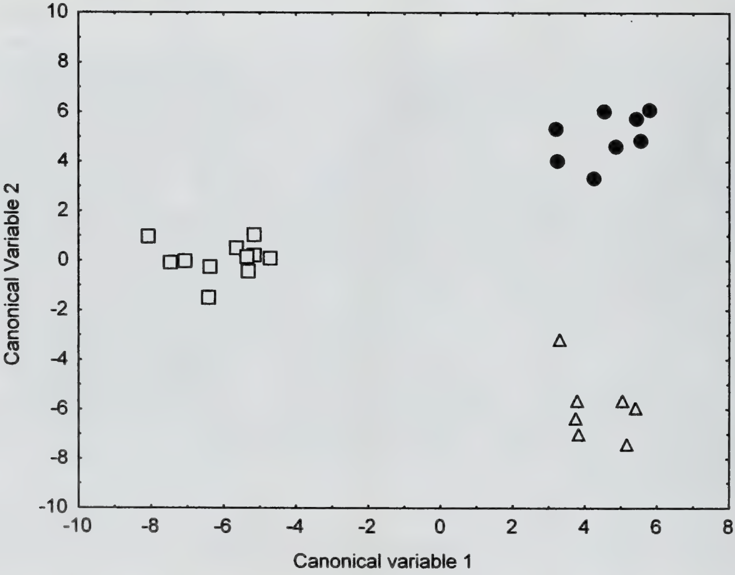

Figure 6. Stepwise discriminant analysis based on 12 morphometric variables from females of *B. polyosoma* from the southern region (△), *B. polyosoma* from the High Central Andes of Bolivia (□), and *B. poecilochrous* from the High Central Andes of Bolivia (●)

TABLE 5

Averages and ranges of measurements (mm) from females of *B. polyosoma* from the Altiplano (n=4) and the southern parts of its range (Patagonia, Tierra del Fuego and Falklands Islands) (n=13).

	Altiplano		Southern Zone	
	$\overline{x}$	Range	$\overline{x}$	Range
Culmen from base	36.5	35.9 – 37	37.1	35.1 - 39.7
Tarsus	85.3	80.0 – 89.6	90.5	83.2 - 99.2
Cubito-radius	130.7	129.0 – 132.0	139.1	132.5 - 145.8
Wing length	395.5	390.0 – 408.0	411.7	392.0 - 446.0
LP10	189.7	186.0 – 196.0	192.3	178.0 - 202.0
Tail	211.3	201.0 – 223.0	218.4	190.0 – 240.0

longer than P8 (third), the same percentage showed the opposite, and 9.1% showed no difference between the feather tips. In males (n = 8) 62.5% had P6 (fifth) longer than P8 (third), 25% the opposite and 12% had both the same length.

In *B. polyosoma* females 92.6% (n = 27) of birds followed Stresemann criterion, 3.7 % (1) did not and the same percentage had both feathers of the same length. The exceptions were due to the growth of P8 being incomplete. All male *B. polyosoma* (n = 22) fulfilled Stresemann's criterion. The average difference between both primaries in *B. polyosoma* was 13.0 mm in males and 16.1mm in females.

Mistakes in the identification of species and sex in museum skins

Errors in sexing

Of the specimens examined, 26.3% (n = 31) had no indication of sex and 7.9% (n = 9) were obviously wrongly labelled: 6.8% (n = 8) of the males were sexed as females, while the remaining 0.8% (n = 1) were females sexed as males. Most of the males sexed as females were *polyosoma*, except for one *poecilochrous*. These specimens are subadults. Birds at this stage show a chestnut-reddish back like the definitive plumage of adult females (Pavez 1998), except for two specimens which had a definitive adult plumage with a grey back.

Errors in identification

Wrongly identified specimens were found in all of the collections studied. A total of 16.7% (n = 7) of all *B. poecilochrous* had been identified as *B. polyosoma*, while only 1.3% (n = 1) of *B. polyosoma* has been identified as *B. poecilochrous*. This high proportion of errors in the determination of *B. poecilochrous* indicates that they had been identified according to Stresemann's criterion or simply misidentified. Other detected mistakes include a *B. polyosoma* identified as a *B. albonotatus*, and two *B. albicaudatus*, one *B. ventralis* and three specimens of *B. albigula* (two of light plumage and one of dark plumage) all identified as *B. polyosoma*.

Discussion

The long debate on the systematics of these taxa has been due to the difficulties experienced by taxonomists when attempting to separate birds in the hand. A series of characteristics exhibited by the species of *Buteo* generate these difficulties. These are: 1) delayed maturation of six years before attaining definitive adult plumage in *B. polyosoma* (Pavez 1998) and *B. poecilochrous* (unpublished data); 2) age-related plumage changes depend on colour phase (Lehmann 1945, Jiménez 1995, Pavez 1998); 3) dimorphic adult plumage (Housse 1945, Vaurie 1962, Pavez 1998); 4) immature males show a chestnut-reddish dorsal patch, as in adult females (Brown & Amadon 1968, Pavez 1998); 5) some plumages appear in both species (Vaurie 1962). *B. polyosoma* and *B. poecilochrous* also share other factors which are common in the genus (Brown & Amadon 1968): two colour morphs (Housse 1945, Lehmann 1945); high individual variability in plumage (Vaurie 1962); medium-size, with some overlapping measurements especially in female *B. polyosoma* and male *B. poecilochrous* (de Vries 1973, Cabot 1991); and overlap in geographical range.

All this leads to a wide array of different plumages with, in addition, interspecific size variations, intraspecific sexual differences and geographical variations in size in *polyosoma* (Jiménez 1995). Variations in shape of specimens, due to differences in preparation, may also have contributed to difficulties in identification.

The unravelling of all these characteristics has been made possible by combining data from museum specimens, captive birds and the field. Previous studies were based on partial and fragmented information extracted from a small (Jiménez 1995), heterogeneous and patchy collection of museum skins which prevented those ornithologists who were not familiar with the species from establishing specific identification criteria. Furthermore, within the examples analysed there are a number of birds belonging to other species, as well as wrongly sexed or misidentified birds (Vaurie 1962, Jiménez 1995 and our results), above all in the cases of *B. poecilochrous* identified as *B. polyosoma*. This last factor is due to the application of the Stresemann rule, a wrongly formulated key which was widely accepted by ornithologists as the only way of separating the species, despite the fact that its effectiveness had been questioned (Hellmayr 1932, Vaurie 1962). This rule gave the species one of the largest ranges of individual size variation among raptors, with very wide ranges given for one sex and very narrow ranges for the other (Brown & Amadon 1968, Blake 1977).

Our statistical analyses of body measurements showed that there are two phenotypes, with differing proportions and sizes, which correspond to *B. polyosoma* and *B. poecilochrous.* They are reasonably easy to separate in flight, and most field observations make no mention of identification problems (Macedo 1964, Fjeldså 1987, Remsen & Traylor 1989, Jiménez & Jaksić 1990, Jiménez & Jaksić 1991, Jaksić *et al.* 1991, 1992).

Between these two taxa, no morphological intergradation related to geographical features has been detected; neither have any field data nor case of morphometry which might suggest hybridisation ever been reported. On the other hand, when *B.*

poecilochrous and *B. polyosoma* share an altitudinal range, sizes and proportions differed.

In *B. polyosoma* body size is linked to geographical features, such that bigger birds occur in the extreme south of the range (de Vries 1973, Jiménez 1995 and our results), smaller birds are found along the coasts of Peru and Ecuador (Swann 1922, Ortíz-Crespo 1986, Fjeldså & Krabbe 1990), while wintering birds in the Altiplano are, on average, slightly smaller than the birds in the southernmost part of the range. In *B. poecilochrous* no size variation was detected according geographic factors.

Farquhar (1998) considered that *B. poecilochrous* is conspecific with *B. polyosoma* based on the following conclusions from the material he examined:

a) wing length and wing formula varied clinally and could not therefore be used to separate the species.
b) in adults and juveniles the shape of the wing tip changed in relation to wing length.
c) wing length varied according to body size and mass, both of which varied with altitude.
d) body colour exhibited huge variation throughout the range.
e) the alarm call given throughout the range did not differ.

Farquhar used incorrect methodology and interpretations:

a) Following Vaurie (1962), Farquhar recognised only two age classes, adults with a white tail and subterminal black band and immatures with a brownish-grey tail with fine dark barring. This classification gives the species a far greater polymorphism than really exists, since it covers the sequential age-related plumage changes which occur as birds attain their definitive adult plumages (Pereyra 1938, Housse 1945, Goodall *et al.* 1951, Jiménez 1995).
b) He failed to attribute variations in colour and plumage patterns to chance and also did not question whether light and dark morphs exist. Likewise, he did not link variation in plumage with sex (Vaurie 1962, Housse 1945, Pavez 1998).
c) He only compared alarm calls, which sometimes resemble those of other *Buteo* species (de Vries 1973). Furthermore, the calls he obtained were from females of four pairs which, surprisingly, correspond to three different silhouette types: long, rounded wing; short, pointed wing and wing long, pointed wing. Fjeldså & Krabbe (1990) noted that calls differ between the two species.
d) He did not analyse available information regarding morphological, ecological and behavioural aspects, which help to separate the two taxa.

As a result of these misinterpretations, Farquhar (1998) obtained a great variety of colour forms with no apparent correlations. He obtained a continuum of wing lengths and shapes which he related, without going into detail, to altitude. In fact, his birds with long wing length (female *B. poecilochrous*) and (smaller) short wing length were at the ends of the continuum, with overlapping male *B. poecilochrous* and female *B. polyosoma* in the middle.

Information available regarding other aspects of the natural history of these birds highlights the differences between the two taxa and agrees with our conclusions. Namely:

a) Plumage morphs. In *B. polyosoma*, pale-morph birds make up almost the whole population, except in Tierra de Fuego and the Falklands Islands where darker birds predominate (Reynolds 1935, Woods 1988). In *B. poecilochrous*, the ratio of dark/pale birds is 50:50, or sometimes with a slight proportion in favour of dark birds (Meyer de Schauensee 1970, de Vries 1973); no geographical variations are documented.

b) Use of space. *B. polyosoma* is a generalist and occurs in a broad variety of regions, while *B. poecilochrous* is restricted to a specific mountainous habitat over 3,500 m (Meyer de Schauensee 1970, Fjeldså 1987, Fjeldså & Krabbe 1990). The two species do not mix where they coexist (Cabot & Serrano 1986, Cabot 1991).

c) Food. *B. polyosoma* takes medium- and small-sized mammals, as well as occasionally larger prey such as domestic fowl, European hares and rabbits (Schlatter *et al.* 1980, Woods 1988, Jiménez & Jaksić 1991). *B. poecilochrous* has a more broad-based diet, both in size and type: earthworms, spiders, beetles, wasps, grasshoppers, fish, frogs' eggs, frog larvae, lizards, birds' eggs, birds, small- and medium-sized mammals such as Cottontails *Sylvilagus* (Lehmann 1945, Macedo 1964, Solís & Black 1985, Jimenez & Jaksić 1990).

d) Hunting techniques and eco-morphology. *B. polyosoma* hunts from look-out points (Bellati 2000) or from low over the terrain (Rocha & Quiroga 1996). *B. polyosoma* has a shorter wingspan, greater wing loading and narrower and more pointed wings which give it, therefore, greater propulsion for flapping flight and more speed and inertia when gliding. A proportionally longer tail also confers greater manoeuvrability. *B. poecilochrous* hunts from the air at considerable height (Rocha & Quiroga 1996), sometimes hunting co-operatively (Cabot 1988), and also walks in search of invertebrates (De Vries & Coello unpublished.). *B. poecilochrous* has the typical features of a glider, with a large wingspan, broad wings, wings with long slots, a large alula and a lower wing loading. These permit high manoeuvrability at low speed, great soaring capabilities, static uplift (Welty 1982) and greater capacity to hang and hover. It holds its wings elevated in a V-form and the broad, short tail permits static climbing in close spirals.

e) Movements. The *B. polyosoma* populations in Patagonia and Tierra del Fuego winter in lowland areas of central and northern Argentina and neighbouring countries. Birds wintering in the Altiplano are thought to originate from central and western Argentina and central Chile, where numbers fall in winter (Jiménez 1995). In *B. poecilochrous* only altitudinal movements to lower areas around 2,000 m in winter in the extreme south of its distribution have been recorded (Jaksić *et al.* 1991).

f) Breeding behaviour. *B. polyosoma* is monogamous and no cases of polyandry have ever been recorded in its extensive range. In *B. poecilochrous*, 75% of breeding birds at Antisana Mountain in Ecuador are polyandrous (Solís & Black 1981, De Vries & Coello unpublished)

All the above indicate that *B. polyosoma* and *B. poecilochrous* should be treated as different taxa. Selective processes have led to mechanisms of ecological speciation. These include the diversification of all aspects of the phenotype, including the evolution of differences that allow the exploitation of different ecological resources, and thus permit coexistence in sympatry. We conclude, therefore, that, according to the biological species concept, *B. polyosoma* and *B. poecilochrous* are isolated species and that their respective specific statuses must be conserved.

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The correct publication date of *Aplonis corvina* (Kittlitz, 1833)

by Julian P. Hume & Alan Peterson

Received 30 September 2002

The recent paper by Hume (2002) contains both an error and confusion regarding the publication details of the name *Aplonis corvina.* The error is that the name should have been written as *Aplonis corvina* (Kittlitz, 1833), because the species was originally described by Kittlitz as *Lampothornis corvina.* The confusion relates to the dating: Hume (2002) followed Amadon (1962) in giving the date of publication as 1833, but then referenced the relevant work (the second part of Kittlitz's *Kupfertafeln zur Naturgeschichte der Vogel* - hereafter *Kupfer. Nat. Vog.*) as 1832, a date that has also been used by some authors.

The Rothschild Library at The Natural History Museum, Tring, has a bound copy of the three published parts (= Hefts) of *Kupfer. Nat. Vog.*, each preceded by its original title page. The title page of the first part is dated 1832, whereas the second and third parts are both dated 1833. The correct publication date for *Aplonis corvina* and other taxa described in the second part is thus 1833. In its entirety, *Kupfer. Nat. Vog.* should be referenced as Kittlitz (1832-33).

A further potential source of confusion, avoided by Hume (2002) but for completeness worth mentioning here, is that Kittlitz (1835) also published a more detailed description and illustration of *A. corvina* in volume 2 of the *Memoirs of the Academy of Imperial Sciences, St. Petersburg,* the title page of which is imprinted 23 November 1831. However, this "1831" paper in fact was not published until 1835 (imprinted title page of the memoirs) and so does not constitute the type description, despite being referenced by Kittlitz (1833) and clearly intended by him to appear first.

For information concerning the nomenclature of *A. corvina* and other nomenclatural matters, the following website, set up by A. Peterson, is available online: http://www.zoonomen.net/

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Hon. Secretary, Cdr M.B. Casement, OBE, RN, Dene Cottage, West Harting, Petersfield, Hants. GU31 5PA, UK. (or **E-mail: mbcasement@aol.com**). For details of Club Meetings see inside front cover.

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As far as possible, review, return of manuscripts for revision and subsequent stages of the publication process will be undertaken electronically.

For instructions on style, see the inside rear cover of *Bulletin* 123 (1) or the BOC website:

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S. 102

Bulletin of the British Ornithologists' Club

THE NATURAL
HISTORY MUSEUM
19 DEC 2003
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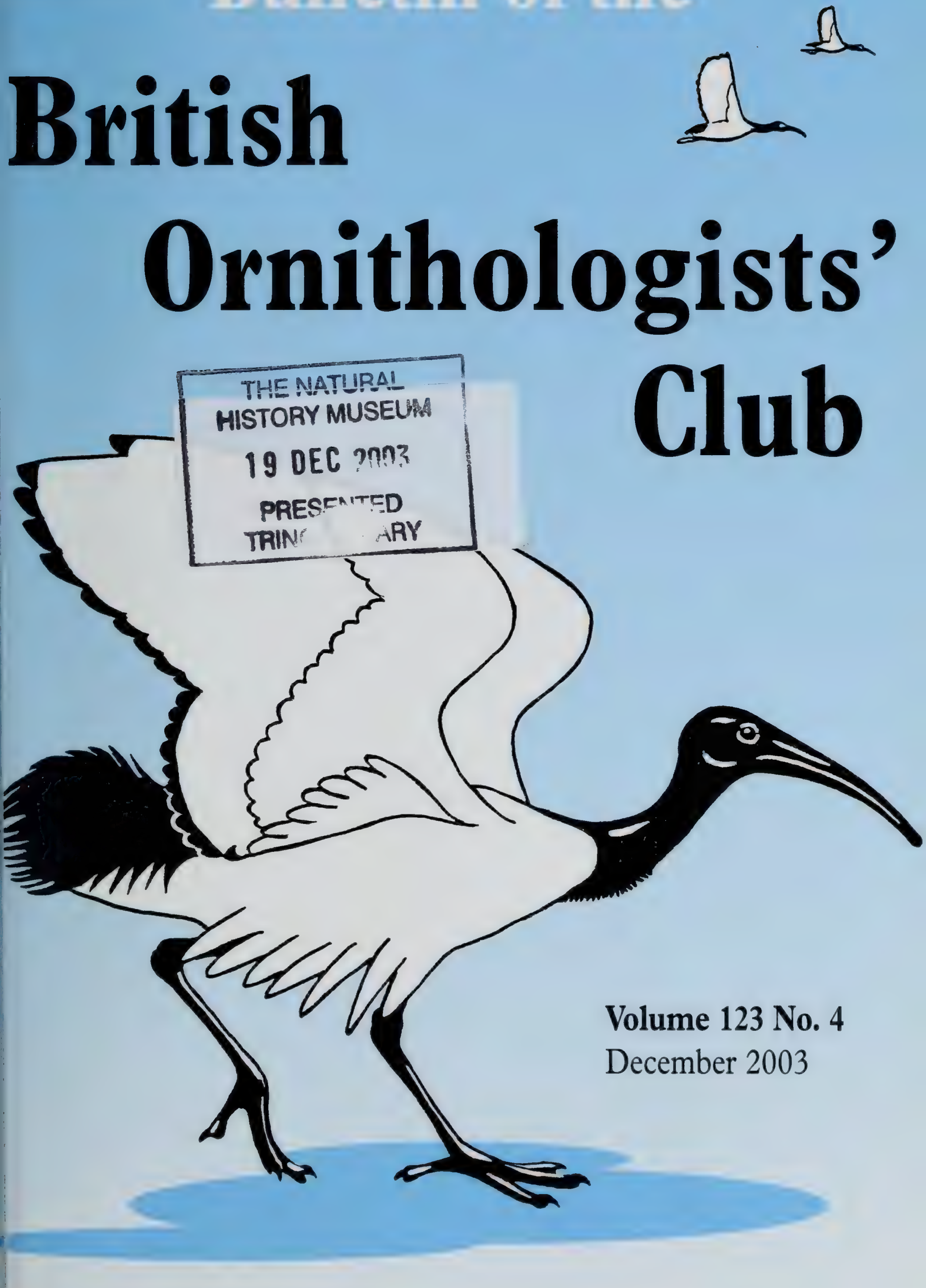

Volume 123 No. 4
December 2003

MEETINGS are normally held in the **Sherfield Building** of **Imperial College**, South Kensington, London, SW7. The nearest Tube station is at South Kensington; a map of the area will be sent to members, on request. [Limited car parking facilities can be reserved (at a special reduced charge of **£5.00**), on prior application to the Hon. Secretary].

The cash bar is open from **6.15 pm**, and a buffet supper, of two courses followed by coffee, is served at **7 pm.** (A vegetarian menu can be arranged if ordered at the time of booking). Informal talks are given on completion, commencing at about 8 pm.

Dinner charges were increased to **£19.00**, as from **1 January 2004.**

FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

Tuesday 20 January - Dr Alan Buckle on "*Rats on oceanic islands - impacts and management*"
The adverse impact of alien species, in particular rodents, on the biodiversity of oceanic islands is increasingly recognised. Irreversible damage has been done but conservationists are now developing management strategies to remove rodents from islands to permit some recovery. Alan Buckle has just retired from a career as a vertebrate pest specialist in ICI, Zeneca and Syngenta. Over the past 20 years he has worked with many of the world's leading conservation agencies to design and implement island renovation schemes. Although his work has taken him to islands all over the world, his talk will concentrate on issues and implementation of two projects in Macaronesia: the first to conserve Zino's Petrel, *Pterodroma madeira,* on the mainland of Madeira and the second to remove rabbits and mice for the benefit of seabirds nesting on the Great Salvage Island.

Applications to the Hon. Secretary by ***6 January,*** *please.*

Tuesday 23 March Nigel Snell - *The return of the Red Kite.*
Nigel Snell worked as a graphic designer for many years, including running his own advertising agency. While still running a consultancy in this field, he became the Project Co-ordinator for the Red Kite Re-introduction Project in the South of England, working firstly with English Nature and latterly with the RSPB. As a member of the Institute of Biology, he is involved in conservation over a wide field of subjects, and has written and co-authored several articles on the Red Kite, in England.

Applications to the Hon. Secretary by **9 March** please.

Future meetings, in 2004. The following **Tuesdays** have been booked:
27 April (AGM) social evening and mini-talks
22 June - Dr. P.J.K. (Phil) McGowan - '*Threatened pheasants and partridges in Asia'.*
28 September - Professor Glen Chilton - *''The curse of the Labrador Duck'*
2 November - Speaker to be arranged
7 December - Speaker to be arranged

Overseas Members visiting Britain are especially welcome at these meetings, and the Hon. Secretary would be very pleased to hear from anyone who can offer to talk to the Club, in 2004, giving as much advance notice as possible - please contact: Michael Casement, Dene Cottage, West Harting, Petersfield, Hants, GU31 5PA, UK. Tel/FAX: 01730-825280 (or Email: mbcasement@aol.com)

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 123 No. 4 Published 5 December 2003

CLUB ANNOUNCEMENTS

Hon. Editor. In the last *Bulletin* I announced my retirement in December 2003, and that Guy Kirwan will take over in January 2004. Please note therefore that after 1 January 2004, manuscripts should be sent to Guy by email to: GMKirwan@aol.com, or by air or surface mail to G.M. Kirwan, 74 Waddington Street, Norwich NR2 4JS, UK.

During just over five years as Editor of the *Bulletin* I have received invaluable support from the B.O.C. Committee, allowing me to introduce a number of changes in practice and style. The former, mainly involving the switch to electronic submission and peer review of manuscripts has, I hope, increased the efficiency of the editorial process. The latter, including a redesign, improvement of paper and the introduction of colour, I hope has improved the presentation and attractiveness of the *Bulletin*. Throughout my tenure, referees have provided vital support in assisting me to assess the quality of submitted papers, and have provided detailed critiques of manuscripts that have improved the quality of accepted papers. Eng-Li Green, our typesetter, has provided a rapid and friendly service in preparing papers for the printer, and Mike Dawson and his colleagues at Crowes have produced excellent final copy. Within the B.O.C Mary Muller has remained undaunted by the prospect of producing the index, despite problems that her computer has periodically thrown at her, Effie Warr has assisted in innumerable ways, and Michael Casement has provided announcements for the Club and material for the covers. Our Treasurer, David Montier, has always responded favourably to my requests for extra space. I thank all who have helped me to produce our unique journal, not forgetting of course the authors, without whose studies the journal would not exist at all!

Chris Feare

Subscriptions for 2004 are due on 1 January and the annual rates are unchanged at:

Members - £18.00 (but **£12.00 only** for paid-up Members of the **BOU**).

Libraries and Institutions - £25.00

It is regretted that the concession to accept payment for up to three years in advance is to be discontinued - this has proved difficult to administer.

Those already paying annually by Banker's Standing Order (the preferred method), or already paid-up for 2004 and 2005, need take no immediate action. **All others** should complete the enclosed renewal form, without delay, please.

Hon. Secretary. Having completed nearly eight years in post, Michael Casement has announced his intention to stand down as Hon. Secretary, as from May 2004. The Committee have decided to divide the current tasks of Hon. Secretary into two posts to cover separately general administration and membership.

URGENT - HELP WANTED. Volunteers are urgently sought to fill the post of **Hon. Membership Secretary.** The prime task is to manage the membership database, and handle the renewal of subscriptions - candidates need to be computer-literate. Enquiries, offers and suggestions to Hon. Secretary as soon as possible, please. E-mail: mbcasement@aol.com.

Membership News. It is with deep regret that we report the recent deaths of three long-serving Members:

Stephen Marchant (1957-2003), Dr. Richard Liversidge (1951-55, 1977-2003 – see obituary below), and Captain Sir Thomas Barlow Bt. DSC RN (1951-2003) (**Hon. Life Member).**

Obituary – Dr Richard Liversidge 1926-2003

Dr Richard Liversidge was born on 17 September 1926 in Blantyre, Malaŵi. His early youth was spent in Malaŵi, India, UK, Zambia, Zimbabwe, Moçambique, Kenya and East London in South Africa. Dr Liversidge's interest in birds began as a schoolboy when he worked at the East London Museum. He changed direction somewhat to register as an engineering student at the University of Cape Town in 1946, but subsequently worked as a technician at the university while majoring in zoology and botany, one subject a year, finally graduating in 1955. His professional life as an ornithologist began with a two-year contract at the Port Elizabeth Museum, and several studies on birds, including one on the Little Sparrowhawk (1962, *Ibis* 104:399-406) and the ecology of the Cape Bulbul for a PhD. In 1964 he was appointed as the first curator of the Tsitsikama National Park, and in June 1966 was appointed to the post of Director of the McGregor Museum in Kimberley, South Africa, a position he held until his retirement in 1986. He died on 15 September 2003 in Kimberley, and is survived by his wife, Vivienne, and three children, William, Helen, Stephen and two grandchildren, Karl and Jason.

Although Dr Liversidge was primarily an ornithologist, a large part of his work at the McGregor Museum involved the negotiations, purchase and development of the historical monuments in Kimberley and the Northern Cape Province, and he was involved in research on springbok and other "game" mammals as well as birds. He was probably most widely known in southern Africa for co-authoring, with Dr Geoff McLachlan, the first (1957) and subsequent three revisions of the *Birds of South Africa*, originally published by Austin Roberts in 1940. He was a productive author, and published over 80 scientific papers and 40 articles in various journals on botany, ecology, ornithology, mammals and history, beginning with his first publication on birds as a schoolboy in 1945. Apart from *Roberts Birds of South Africa*, he co-authored books on *Ludwig Krebs, Naturalist to the King of Prussia*; *Springbok Management*; *Game Ranch Management* (in English and Afrikaans) and authored *A Rapid Bird Guide* (1978) and *The Birds Around Us* (1990).

In recent years Dr Liversidge focused some of his attention on pipits, and described two new species, *Anthus longicaudatus* (1996, *Bull. Brit. Orn. Cl.* 116: 211-215) and (together with Gary Voelker) described *Anthus pseudosimilis* in 2002 (*Bull. Brit. Orn. Cl.* 122: 93-108).

Although birds remained one of his primary interests, and particularly the birds of the Kalahari arid savanna, Dr Liversidge had interests covering a wide range of subjects. He was a founder member of the Historical Society of Kimberley and the Northern Cape and was instrumental in the foundation of the Northern Cape Game Farmers' Association. He was chairman of the Northern Cape Wildlife Society (which became the Northern Cape Region of the Wildlife and Environment Society of SA) for some years, was appointed to the National Monuments Council in 1977, serving on its executive committee from 1987 to 1990, and served on the Council of the Zoological Society of South Africa and the Wild Life Management Association. He was also the last surviving founder member of the Cape Bird Club, the Western Cape branch of BirdLife South Africa.

In 1962 he was elected an honorary Corresponding Member of the American Ornithologists' Union and in 1990 to a full Corresponding Member. In 1994 he was elected as a Fellow of the Linnean Society of London and in 1996 a Fellow of the SA Museums Association. Other awards were for Game Conservation in the Cape Province (1976), a Merit Award from the Northern Cape Game Ranchers' Association (1990) and the Cape Times Centenary Medal (1990) for outstanding achievements in the conservation of historical buildings.

W. Richard J. Dean

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The 918th meeting of the Club was held on Tuesday 23 September 2003, in the Sherfield Building Annexe, Imperial College. 26 Members and 13 guests were present.

Members attending were: Dr C.F. MANN (*Chairman*), Miss H. BAKER, Sir David BANNERMAN Bt., K.P. BETTON, I.R. BISHOP, Ms D.V. BREESE, D.R. CALDER, Cdr M.B. CASEMENT RN, Dr. J.H. COOPER, Dr. C. FISHER, F.M. GAUNTLETT, Rev. T.W. GLADWIN, D. GRIFFIN, C.A.R. HELM, J.P. HUME, D.S. MELVILLE, D.J. MONTIER, Mrs A.M. MOORE, A.J. PITTMAN, R.C. PRICE, Dr. R.P. PRŶS-JONES, R.J. PRYTHERCH, P.J. SELLAR, S.A.H. STATHAM, N.H.F. STONE, and C.W.R. STOREY,

Guests attending were: Lady BANNERMAN, Ms G. BONHAM, Mrs C.R. CASEMENT, Ms K. COOK, J. CUDDY, Mrs M.H. GAUNTLETT, Mrs J.M. GLADWIN, J. GREEN, Dr. J. GROOMBRIDGE (*Speaker*), P. MOORE, Miss J. MELVILLE, Mrs M. MONTIER, and Mrs S. L. STONE,

After dinner, Dr. Jim Groombridge gave a splendid illustrated presentation entitled "*Restoring rare honeycreepers in Hawaii - the cutting edge of bird conservation*". The following is a brief synopsis:

The Hawaiian honeycreepers represent one of the most spectacular evolutionary radiations of birds, but the Hawaiian islands, which contain such a diversity of endemic biota, have been described by some authorities as the extinction capital of the world. At least 60% of Hawaiian honeycreeper species are believed to have gone extinct since the onset of human settlement on this volcanic island chain. Despite such historical loss, intensive efforts are being made to restore the rarest of those that remain. The Maui Forest Bird Recovery Project, a US Federal and State funded initiative, is responsible for restoring Maui's three most endangered forest birds. Most notable of these is the Po'o-uli, or Black-faced Honeycreeper *Melamprosops phaeosoma*. This species may well be the rarest bird in the world, with only three individuals known to exist in the wild, no captive population, and currently no known breeding pair.

How to restore a bird of such extreme rarity has challenged biologists ever since the discovery of the Po'o-uli in 1973. In April 2002, after several years of development of field techniques and *in situ* preparation, important progress was achieved towards recovering the Po'o-uli. One of the two females was captured and translocated into the home range of the single male, in an attempt to initiate a wild breeding pair. The female Po'o-uli was fitted with a radio-transmitter, and released close to where the male was located. Unfortunately, the female returned to her own home range without encountering the male, but she was radio-tracked for 10 days, revealing valuable new information on such a poorly known species.

This field operation was supported by the State of Hawaii and the US Fish and Wildlife Service, and its successful completion provided vital new ecological information leading to a new strategy for the Po'o-uli. New knowledge that the Po'o-uli appears to acclimatise well under captive conditions in the field has underpinned a new plan to catch the remaining three birds and attempt to breed them in captivity. The case of the Po'o-uli illustrates the difficult choice that managers on Hawaii face when making such decisions; to invest in intensive hands-on species-level management, or instead to focus on the broader benefits of ecosystem-scale restoration as an alternative means of saving species of extreme rarity? When dealing with numbers of individuals as low as a few individuals, the risk of extinction will always be high. More encouragingly, however, progressive recovery strategies, such as that devised for the Po'o-uli, can provide managers with a solution when delays could make the difference between extinction and recovery. The talk concluded with a video showing stages of the project in progress.

Note. For a full description and appraisal of the recent recovery efforts for the Po'o-uli please refer to a paper currently 'in press': Groombridge *et al.* 2003. An attempt to recover the Po'ouli and an appraisal of recovery strategy for bird species of extreme rarity. *Biological Conservation.*

New seabird records from Round Island, Mauritius

by Don Merton & Mike Bell

Received 14 October 1999, revision received 13 August 2003

During conservation management work being undertaken by the authors on Round Island, Mauritius, Indian Ocean, four species of seabird not previously recorded there were observed or captured.

Round Island (19°51'S, 57°48'E; Fig. 1), a Nature Reserve, 22.5 km north-east of Cape Malheureux on the Mauritius mainland, has an area of 151 ha and rises to 280 m a.s.l. It is one of the larger and more distant outliers of a scattered group of six small uninhabited islands of volcanic origin off the northern coast of Mauritius. The island comprises part of the rim of an extinct and partly submerged basaltic volcanic cone. The surface is dominated by exposed rock with generally small isolated pockets of soil supporting remnants of degraded vegetation. Two mammal species were introduced last century - goats which were eradicated in *c.* 1979 and rabbits which were eradicated in 1986 (Anon. 1987, Merton 1987).

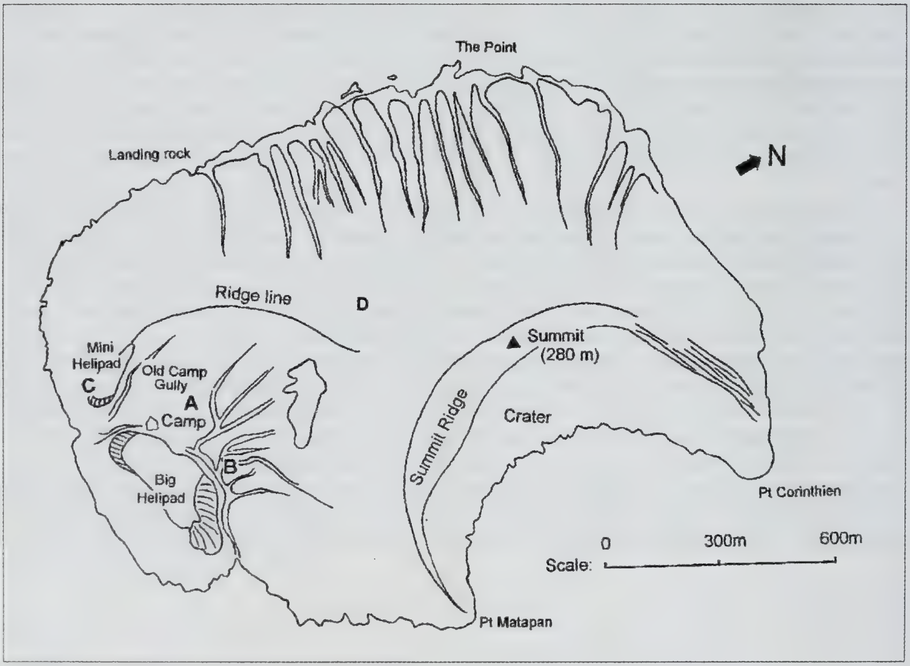
The Point
Landing rock
N
Ridge line
D
Mini Helipad
C
Old Camp Gully
A
Camp
B
Big Helipad
Summit (280 m)
Summit Ridge
Crater
Pt Corinthien
Pt Matapan
Scale: 0 300m 600m

Figure 1. Location of seabird sightings on Round Island. A: Audubon's Shearwater caught 15 July 1988 and heard 11 August 1993, B: Little Shearwater caught 8 September 1986, C: Bulwer's Petrel caught 18 June 1987, D: Bulwer's Petrel incubating egg in nest, 7 December 1994.

Species accounts

LITTLE SHEARWATER *Puffinus assimilis*

At *c.* 2130 h on 8 September 1986 DM captured a Little Shearwater on the ground in a gully on the southern slopes of Round Island (Merton *et al.* 1989). This appears to be only the second record of this species from Mauritius.

This bird had sooty black upperparts, white underparts (colour of upper and lower parts were a little discoloured by oil); underwing white, tips of secondaries black; darkish eye/ear patch, bill with black top and tip, blue sides; outer leg dark blue, inner leg blue, toes blue except outer edge of outer toe black, webs pinkish-blue, claws black. Brood-patch not checked. No call heard. Measurements (mm): wing length 175.9, tail 70, bill length 24.3, bill depth 8, tarsus 37.9, MTC 40, claw 7.5. Mass 149 g.

AUDUBON'S SHEARWATER *Puffinus l'herminieri bailloni*

A small shearwater suspected of being Audubon's Shearwater was heard in flight before and soon after daylight on most mornings and occasionally sighted at night on the ground between 29 June and 15 July 1988. At *c.* 0515 h on 15 July 1988 DM flushed the elusive shearwater into a low-set mist-net in a rocky area *c.* 300 m above New Camp Gully on the southern slopes of Round Island. This capture enabled it to be positively identified as Audubon's Shearwater. The bird had no obvious brood patch. This is apparently the first record of this species from Round Island.

The bird was a smallish, dark greyish-black and white shearwater. Upperparts were sooty greyish-black with a brownish tinge on the scapulars, and a dark cap to below eye level. The breast band extended well down onto chest, white beneath. Under wing white with broad dark margins. Tail dark, under side of tail pale with 42 mm wide blackish band at tip. Eye dark brown. Bill black. Tarsus - upper and inner surfaces pink, lower and outer surfaces blackish; webs pink, outer toe (and outer edge of central toe) black. No brood patch. Measurements (mm): total length 295 mm, wing length 179.9, tail 74, bill length 25.7, bill depth 9.4, width at gape 11.2, tarsus 36.1, MTC length 38.9. Mass 183 g.

On 11 August 1993 MB and party heard what they took to be an Audubon's Shearwater during the night. This was at approximately the same location that DM had, seven years earlier, caught the bird described above.

BULWER'S PETREL *Bulweria bulwerii*

At *c.* 2300 h on 18 June 1987 DM's party captured a small dark petrel on the ground in a rocky area on the south-western slopes of Round Island. The bird was later identified as Bulwer's Petrel - apparently the first record of this species in the Mascarene Islands (Merton *et al.* 1989). Although this individual had a large, completely bare brood patch, no nest or further birds of this species were found during searches on that or subsequent nights.

This bird was a very small entirely sooty black petrel with a long wedge-shaped tail and a slight pale sheen around the face. The base of the primaries was perhaps a little paler. Bill and eyes black; legs greyish-horn colour with a pink tinge near joints; webs greyish-flesh, darker around edges and pinkish towards inner toe. Inner toe base and web pinkish-purple, inner 1/3 of inner web pinkish. Tail long, pronounced wedge shape particularly when fanned – central feathers much longer than others. Obvious filoplume "crest". Interior of bill pale pink. Large completely bare brood-patch. No call heard. Measurements (mm): total length 276, wing length 217, tail 116, bill length 23.8, depth 10.8, width 9, tarsus 28.2, MTC 30.6. Mass 111 g.

On 7 December 1994 MB found a Bulwer's Petrel incubating an egg in a nest near the summit of Round Island. The nest was in an area of scattered rocks and rock piles. The bird was still incubating a few days later when the team left the island. An intensive search of the area did not reveal any further nests and night searches failed to locate any more birds. This was the first breeding record for the species in the Indian Ocean.

BLACK-WINGED PETREL *Pterodroma nigripennis*

Between 15 and 21 December 1992 DM regularly heard a gadfly petrel in flight in the late afternoon and after dark over the southern and south-western slopes of Round Island (Strahm 1993). The call was identical to that of *Pterodroma nigripennis.*

During the period 4 – 10 December 1994 MB observed a small gadfly petrel over the lower southern slopes of the island. It was seen and heard calling every evening at dusk. It was often seen in aerial pursuit of Herald Petrels *Pterodroma arminjoniana* and was slightly smaller than them. The bird was observed at very close range as it passed low overhead in response to "war-whooping" calls made by MB's party. The bird called regularly with a rapid "chee-chee-chee". It was uniformly grey above with a reasonably distinct inverted W pattern on the upper wings. The head was grey above with a white forehead, and white below with a grey partial collar. Underparts were white, underwing white with a dark trailing and leading edge to the carpal joint and then diagonally towards the body about the mid wing. Bill black.

The bird was not caught and identification is based on the calls and observation at close range.

Conclusion

Removal of introduced browsing mammals has resulted in some stabilisation of soils, a marked increase in ground cover and the initial stages of regeneration of woody vegetation. Thus, the island is likely to become increasingly more attractive to breeding seabirds. This, together with its mammalian predator-free status and strategic location in the tropical Indian Ocean, make Round Island potentially a very important seabird breeding station. The occurrence of previously unrecorded petrel and shearwater species prospecting and breeding on the island is indicative of its recovery.

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Strahm, W. 1993. *A decade of change on Round Island, 1982-1992.* Unpublished report to Mauritius Wildlife Foundation and Jersey Wildlife Preservation Trust.

Addresses: Don Merton, Department of Conservation, PO Box 10-420, Wellington, New Zealand; Mike Bell, Wildlife Management International Limited, PO Box 14-492, Wellington, New Zealand.

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The discovery of the Long-tailed Wren Babbler *Spelaeornis chocolatinus* in Thailand

by Philip D. Round & Anak Pattanavibool

Received 8 June 2002

We report the discovery of a population of the Long-tailed Wren Babbler *Spelaeornis chocolatinus* on the 2,160 m peak of Doi Kajela (16° 10'N, 99° 02'E), in Umphang Wildlife Sanctuary, Tak Province, Western Thailand, during a preliminary appraisal of wildlife and forests on this biologically unexplored mountain, 21–26 April 2001. The site had been identified, under the name Khao Kha Khaeng, as being of likely ornithological importance in Round (1988), and invited survey.

The authors were accompanied by Mr. Martin van de Bult, Field Botanist, Western Forest Complex Ecosystem Management Project (WEFCOM), two staff of the WEFCOM Project, Mr. Nont Khieowan and Mr. Kwanchai Waiphanyakam, Mr. Siriya Sriphanomyom, an undergraduate student from University of Khon Kaen, and two wildlife sanctuary workers, Mr. Tom Sertnieo and Mr. Duangchan Bajai.

The party left the Mae Klong Khii Guard Station of Umphang Wildlife Sanctuary, at Km 120 on the road between the district towns of Mae Sot and Umphang, on the morning of 21 April, reaching the upper elevations of Doi Kajela at midday on 24 April, a straight-line distance of only *c.* 9 km to the south-east. Progress was slow because of the absence of any known trail and because dense bamboo, resulting from old fire damage, had grown up along ridges at around 1,500–1,800 m, impeding progress. Camp was established on a ridge below the summit of Doi Kajela, in little-disturbed, broadleaved evergreen forest, close to a small stream gully, at 2,100 m, on the afternoon on 24 April. That evening, at around 1800 h, after the group returned to camp following an excursion to the summit area, PDR descended into the damp stream gully to search for skulking understorey birds. The two sanctuary workers also came down and commenced to cut rattan shoots to supplement the evening meal. Possibly in response the noise of this hacking of vegetation, an unfamiliar bird started calling. While awaiting the bird's emergence, its vocalizations were tape-recorded using a Sennheiser ME-88 microphone in combination with a home-made pre-amplifier, and a Sony Walkman Professional WM-D6C analogue cassette tape machine.

At this point no playback was used and the observer waited quietly until the bird came into view, at the edge of the dense ground storey vegetation along the edge of the small streamlet. It was approximately the shape of a *Stachyris* babbler, with a moderate length tail, rufous-orange underparts and grey on the sides of the head and across the forecrown. PDR immediately realised that this was a species not hitherto recorded from Thailand. Playback of the bird's tape-recorded trilling call resulted in calling by a pair of birds, in which the birds duetted, one individual (presumably the male) giving the trill and the other, the presumed female, giving a rasping note. Subsequent views of the second individual (the bird which was making the trilling vocalization, and which was seen head-on) revealed grey sides to the head, a pencil thin blackish moustache along the lower margin of the ear coverts and a prominent white throat. The colour of the underparts was not specifically noted and the light was beginning to fade, but unlike the first bird these did not appear to be strongly rufous-orange.

PDR informed AP that evening of his discovery, and on the following morning PDR, AP and SS descended to the gully in search of the babbler, all observers obtaining further brief views of one individual. Following this, PDR visited another gully in the vicinity of the camp, and discovered a second pair, obtaining close views of one individual, presumed to be a female because it was giving the rasping call, and hearing the trilling call of the male in the vicinity. One other bird, representing a third pair or territory, was heard below the summit, *c.* 500 m distant.

PDR tentatively identified the bird as possibly belonging to the genus *Spelaeornis* on the basis of the scaled upperparts, but was puzzled by the absence of barring or spotting on the wing coverts. An unfamiliar *Pellorneum* was also considered, in view of the species' slight resemblance to *P. albiventre*. None of the party was carrying Robson (2000) or any other work on extralimital birds, so formal identification had to await return to Bangkok. After consulting Robson (2000) PDR and SS separately and independently concluded that the birds were Long-tailed Wren Babblers, of the race *reptatus*. The call of this form was described by Robson as a repeated, decelerating trill, *pwwrriii'i'i'i'i* which tallied closely with the Doi Kajela birds. The only feature which did not tally with the depiction and account in Robson was that none of the party had observed any barring or mottling on the underparts. PDR sent a copy of his tape to Craig Robson without informing him of his diagnosis. CR had no hesitation in identifying the bird as *Speleaornis chocolatinus reptatus* after comparing the tape with another recording of this taxon from Yunnan (C. Robson *in litt.* to PDR).

Description

A small babbler with warm rufous-olive upperparts, lacking any tipping on wing coverts or tertials, though with soft mottling or scaling on hindcrown and hindneck formed by contrast between centres and margins of individual feathers. It was not seen if the mottling extended on to the mantle. Grey sides to the head extended in a brow above the eye and also met across the forecrown (the brown of the crown extended forward along the midline but did not appear to extend to the base of the bill). Two birds identified as females on the basis of their rasping (rather than trilling) calls showed breast, flanks and belly all warm orange-rufous, with a whitish patch extending forward between the legs. The under tail coverts were not white but appeared either dull rufous or fulvous in colour. The colour of the throat was not specifically noted, though the birds lacked any moustache. The bill was blackish-grey and the legs brownish-flesh. The iris was dark, either dark brown or reddish. The male bird differed in seemingly being duller on the underparts (though the colour was not specifically noted); in having a pencil-thin black moustache along the lower margin of the ear coverts and a prominent white throat.

The general proportions and actions recalled Spot-throated Babbler *Pellorneum albiventre*, or perhaps a small *Stachyris* babbler. The birds kept to within < 1 m from the ground, in dense herbage though on a few occasions birds perched out on a fallen logs or stumps.

The male call was a loud, 1.5 second long bubbling trill, *prrrpi-pi-pi-pi-pi-pi* The female call was a rasping *pitcherrr-pitcherrr* (Fig. 1). One of the female birds gave soft *pt . . . pt . . .* calls when moving through the foliage, feeding. The trilling call was very distinctive and bore no resemblance to any vocalization of the *Pellorneum* and *Stachyris* species known to the authors.

Renewed impetus to explore Doi Kajela came following the November 2000 discovery of Rusty-capped Fulvetta *Alcippe dubia*, also previously unrecorded in Thailand, on the nearby 1,960 m mountain of Doi Mokoju (15° 56'N, 99° 06'E), on the border between Mae Wong National Park and Umphang Wildlife Sanctuary (Wachara Sanguansombat, *in litt.* to P.D. Round, December 2000). Like Doi Mokoju, Doi Kajela supported a population of *A. dubia* and other higher montane species restricted to a small number of peaks in Thailand, such as Yellow-bellied Fantail *Rhipidura hypoxantha*, White-browed Shortwing *Brachypteryx montana*, Chestnut-tailed Minla *Minla strigula* and Green-tailed Sunbird *Aethopyga nipalensis*. It is possible that the Long-tailed Wren Babbler will be found also on Doi Mokoju with improved coverage of that mountain, perhaps having been overlooked up to the present.

Four presently recognised subspecies of *Spelaeornis chocolatinus* occur in NE India and SW China, in western, northern and eastern Myanmar and W Tonkin, at elevations of 1,200 m to 2,800 m (Ali & Ripley 1983, Cheng 1987, Robson 2000). *S.c. reptatus* occurs in NE India (Rasmussen & Anderton, in press), in NE and E Myanmar to SW China, north possibly as far as Sichuan (Cheng, 1987; Fig. 2).

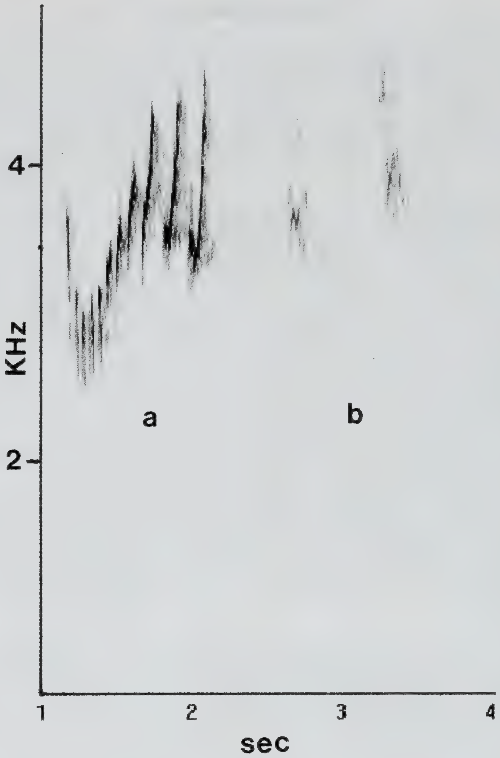
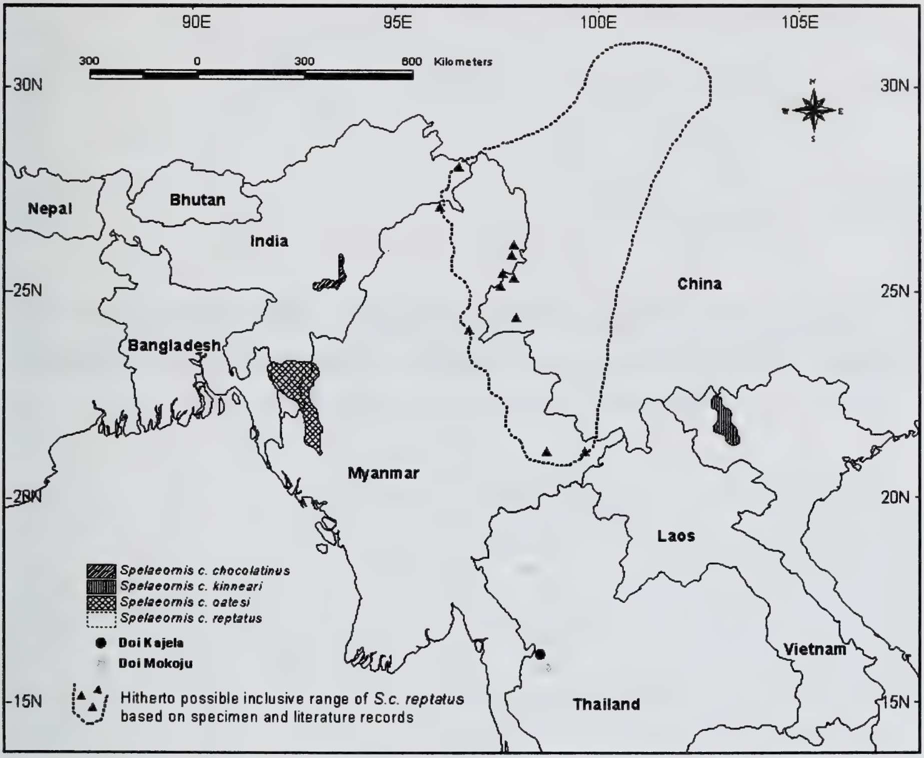


Figure 1. Sonogram of vocalizations of Long-tailed Wren Babbler *Spelaeornis chocolatinus*, Umphang Wildlife Sanctuary, Tak Province, western Thailand, April 2001. The fist element (a) is a rising, bubbling trill, given by the male, followed by a rasping call (b) given by the female.

Robson (2000) documented considerable differences in song among some of these subspecies, implying that *S. chocolatinus* as presently constituted may be a complex of more than one species, and indeed *reptatus* is treated as a full species by Rasmussen & Anderton (in press). The occurrence of *S. c. reptatus* on Doi Kajela was highly significant and unexpected, since this site lies over 500 km to the south of the hitherto southernmost records, in Kengtung, E. Myanmar (Bingham 1903, Stanford & Mayr 1941). The absence of records from the avifaunistically similar mountains of Doi Inthanon (2,565 m) and Doi Pha Hom Pok (2,285 m), which lie between Doi Kajela and Kengtung, at 18°35'N, 98°29'E and 20°04'N, 99°09'E respectively, may reflect a genuine distributional patchiness in this taxon, given that these mountains are among the best surveyed sites for forest birds in northern Thailand.


90E
95E
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105E
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30N
25N
20N
15N
Nepal
Bhutan
India
Bangladesh
Myanmar
China
Laos
Vietnam
Thailand
Spelaeornis c. chocolatinus
Spelaeornis c. kinneari
Spelaeornis c. oatesi
Spelaeornis c. reptatus
Doi Kajela
Doi Mokoju
Hitherto possible inclusive range of S.c. reptatus based on specimen and literature records

Figure 2. Ranges of the subspecies of Long-tailed Wren Babbler *Spelaeornis chocolatinus.*

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Rediscovery of John Crampton W. Kershaw's birds from Macau, including his record of Small Niltava *Niltava macgrigoriae*

by Frank D. Steinheimer, Emmett R. Easton & Richard W. Lewthwaite

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John Crampton W. Kershaw (died August 1950 aged 79) considered himself an entomologist rather than an ornithologist and referred to himself as a retired zoologist in later years (Kershaw 1907, Vaughan & Jones 1913, Easton 1999 a,b), yet published an important list of the birds of Macau ("Macao") and adjacent parts of the Guangdong ("Quangtung" or "Kwangtung") coast east to Hong Kong (Kershaw 1904). Following Robert Swinhoe's pioneering visit in 1860 (Swinhoe 1861), Kershaw's paper was not the first to deal with this area but added to the list and included notes on the status and seasonality of most species. In this respect it has subsequently proved to be of much value in the ornithological progress of the area (Vaughan & Jones 1913, Mell 1922, Herklots 1953, Carey *et al.* 2001).

As is clear from the opening sentences of the paper, Kershaw's list of species is based mainly on his own collection of birds, which was made between October 1901 and June 1903, chiefly at Macau. Thus, he included in the duck accounts only those species "of which I have shot specimens myself" (Kershaw 1904: 235). He also "often shot Cuckoos" (Kershaw 1907: 139), more through interest in their 'entomological' stomach contents than the birds themselves. However, until recently, it was not known whether any part of his Macau bird collection was still in existence. New investigations at The Natural History Museum, Tring, have now brought some of Kershaw's South China birds to light.

Method

All possible collections within Europe, especially in Britain, were checked for the name 'Kershaw' and collectors' names associated with him, by consulting several web catalogues (e.g. www.man.ac.uk/fenscore), literature (Roselaar 2003) and The Natural History Museum accession indices. Additionally, one rare bird record from his publication was chosen to trace the actual specimen among museums' holdings.

Result

The Natural History Museum egg acquisition index quotes the receipt of one Slaty-backed Forktail *Enicurus schistaceus* egg in 1909 via the Stuart Baker collection, which derived from Kershaw and was very likely taken at Dinghu Shan, as well as two eggs, probably of the Plaintive Cuckoo *Cacomantis merulinus*, found together with eggs of Common Tailorbird *Orthotomus sutorius* (2 preserved), from Macau. Other than that, no sign of Kershaw's avian skin collection was found in any reference or web catalogues, though parts of his insect collections are known to have ended up in the Bishop Museum, Hawaii, the Booth Museum of Natural History, Brighton, and the Oxford University Museum of Natural History, Oxford, UK (Smith 1986: 130).

Fortunately, however, the inclusion of Small Niltava *Niltava macgrigoriae* (ssp. *signata*, *fide* Watson *et al.* 1986 and Cheng 1987) in Kershaw's (1904) list allowed the collection to be rediscovered. This is the only record from the coast of Guangdong to date, and Kershaw's statement ("I have seen only one pair, in winter, the female of which I collected") led to the species being established in the regional literature, but not in that of Hong Kong (since no locality is given). Thus, Mell (1922) listed Kershaw's record as the only one for Guangdong "ein Paar im Winter gesehen" (one pair seen in winter), La Touche (1925-30) followed with "Kwangtung (one pair seen in winter)", Gee *et al.* (1926-27) with "Recorded from Kwangtung once in winter", and Cheng (1987) with "Guangdong Province … rare in winter".

Summarising its distribution in China, Cheng (1987) stated that the Small Niltava (sub-species *signata*) is uncommon in summer and rare in winter, occurring as a breeding species in parts of Tibet, Yunnan and Guizhou, as a resident in eastern Guangxi, and in winter in Guangdong; an accompanying map indicated a wintering range south-east of its breeding range, from south-west Guangdong north to the West River and east to the Pearl River Delta (where Macau lies). Subsequently, Lewthwaite (1996) documented a range extension into northern and central Guangdong, southern Hunan, and north-west Fujian, whilst Fellowes & Hau (1997) added records from central Guangxi and south-west Guangdong. Small Niltava appears to be fairly common at some localities in south-east China, with virtually all records referring to birds on territory between 5 April and 19 August, the habitat being forest or shrubland at 1,000-1,900 m asl; one on 27 March at Nan Kun Shan in central Guangdong (less than 200 km north-east of Macau) was probably a migrant since there have been no other records from this locality (Lewthwaite 1996, Fellowes & Hau 1997, Lewthwaite unpublished data).

The Natural History Museum's collection holds only a single specimen of Small Niltava from South China, a female obtained at Macau, which was acquired within

Frederick William Styan's (1858-1934) collection. The date on the label, 11 February 1902, fits well with Kershaw's collecting period at Macau from October 1901 to June 1903 (Kershaw 1904). There are no signs of feather or bare part damage on the specimen, which might have suggested captive origins.

Styan retired from China in 1904 (Rickett 1935) and most likely brought his bird specimens back to England along with those collected by Kershaw. Kershaw himself left Macau to travel to Indonesia with the entomologist Frederick Arthur Godfrey Muir (1872-1931) from the Hawaiian Sugar Planters' Association. They jointly discovered and subsequently described a new form of Red-bellied Pitta, *P.* (*erythrogaster*) *piroensis* Muir & Kershaw 1910, in Indonesia. This single specimen was donated to the Museum of Comparative Zoology, Harvard University, Cambridge Mass. (MCZ #49,997). Though Kershaw returned to South China in between his Indonesian travels, he then reported collecting only eggs and nests but no further skins (Kershaw 1911, The Natural History Museum egg acquisition index).

Styan himself never mentioned the first and only record of *Niltava macgrigoriae* for Macau as he did not publish ornithological papers after his return to Britain (except Styan 1928, cf. Rickett 1935). Thus it seems very likely that his specimen was indeed that of Kershaw (1904). Furthermore, nearly all Styan's Macau birds have the same kind of label, which is not found on any other specimen from Styan's collection. Styan never indicated on his collection labels the name of the actual field collector, though some of the birds still carry the original collector's label, several in Chinese.

In later years Styan and Kershaw maintained a long friendship, when both retired to Kent, UK. Some of Kershaw's specimens were clearly incorporated into Styan's collection before its donation to The Natural History Museum, then the British Museum of Natural History, between 1907 and 1914. Subsequently all specimens in Styan's collection, which comprised at that time 6,447 bird skins and 223 eggs (Rickett 1935), were credited to him as collector (cf. labels: Macao Kuan Tung Province, S. China / F. W. Styan, Esq. [P.]).

The Natural History Museum currently holds within the Styan collection 67 probable Kershaw specimens from Macau (several more were registered but could not be found, while additional Macau specimens remain too uncertain of deriving from Kershaw to be included). Kershaw seems not to have sexed his specimens internally as the sex is only stated if the species is sexually dimorphic. Exceptions, however, are the cuckoo species, of which he sexed several individuals internally, probably in the course of analysing their stomach contents (Kershaw 1907). His assumed original labels are in two different styles. The older ones are of the type "No□46. M. [for Macao] Mar. 21st /02" (from the specimen of *Sturnus sinensis*). Later labels take the form "*Oriolus diffusus* M. 2-6-03". Kershaw's skins are loosely stuffed, mostly with wood-wool, and always leave the incision un-sewn.

Twenty-nine birds from Macau collected, during October and November 1903 (BMNH 1914.8.15.316-322 & 394-396; 1914.8.20.45; 1914.9.3.101-115 & 157-

163 & 202-206 & 468), may derive from Styan himself as they are all sexed and are compiled in longer species series (e.g. 15 specimens of one species, while Kershaw seems to have never taken more than a dozen). Several of these presumed Styan birds (i.e. Japanese Waxwing *Bombycilla japonica*, Goldcrest *Regulus regulus*, Common Redpoll *Carduelis flammea*, Long-tailed Rosefinch *Uragus sibiricus* and Pallas's Rosefinch *Carpodacus roseus*), however, seem to originate from further north, not from the southern coast of China. The few specimens from Hong Kong within the Styan collection seem not to be collected by either of the two collectors in question as most of them lack the collecting date.

We deduce that among Styan's birds (register entry) the following specimens were in fact collected by Kershaw (sequence and numbers follow Kershaw 1904; identification to sub-species is as sorted in The Natural History Museum and as given in literature, respectively; names from Peters *et al.* 1931-1986; OL = original label probably by Kershaw; uncertain designation to Kershaw in square brackets; discrepancies of label and register data mainly due to errors of the latter):

4. *Dendrocitta formosae sinica* BMNH 1914.8.10.135, Macau, 18 December 1901, coll. No. none.
9. *Myiophoneus caeruleus caeruleus* BMNH 1914.5.13.20, Macau, 18 January 1902, coll. No. 17, OL.
10. *Erithacus sibilans* BMNH 1914.7.16.527, Macau, 15 January 1902, coll. No. none.
15. *Dicrurus macrocercus cathoecus* BMNH 1914.8.10.71, Macau, 17 April 1902, coll. No. 58, OL.
17. *Dicrurus leucophaeus* ssp. BMNH 1914.8.10.85, Macau, 15 May 1903, coll. No. none, OL.
20. *Coracina melaschistos avensis* BMNH 1914.5.6.433, Macau, 8 May 1903, coll. No. none, OL;
    BMNH 1914.5.6.452, Macau, 13 April 1902, coll. No. 56, OL.
23. *Lanius cristatus lucionensis* BMNH 1914.5.20.141, Macau, 29 April 1902, coll. No. 65, OL.
24. *Oriolus chinensis diffusus* BMNH 1914.8.10.99, female, Macau, 2 June 1903, coll. No. none, OL; BMNH 1914.8.10.100, male, Macau, 29 April 1902, coll. No. 63, OL.
25. *Sturnus cineraceus* BMNH 1914.9.12.52, Macau, 20 February 1902, coll. No. 28, OL.
26. *Sturnus sericeus* BMNH 1914.9.12.56, Macau, February 1903, coll. No. none, OL; BMNH 1914.9.12.57, Macau, 4 January 1902, coll. No. none; BMNH 1914.9.12.58, Macau, 3 January 1902, coll. No. none, OL; BMNH 1914.9.12.59, Macau, 18 January1902, coll. No. 12, OL.
27. *Sturnus sinensis* BMNH 1914.9.12.39, Macau, 21 March 1902, coll. No. 46, OL.

29. *Acridotheres cristatellus cristatellus* BMNH 1914.9.12.1, Macau, February 1903, coll. No. none, OL; [BMNH 1914.9.12.2, registered as Crested Myna, is in fact a Blackbird; see below].

32. *Orthotomus sutoria longicauda* BMNH 1914.6.12.130, Macau, 27 January 1902, coll. No. 22, OL.

38. *Seicercus burkii* ssp. BMNH 1914.5.6.302, Macau, 27 December 1901, coll. No. none.

[39.] *Urosphena squameiceps* BMNH 1914.6.12.174, Macau, 4 February 1902, coll. No. 24, OL [in Kershaw 1904 included in *Cettia canturiens* (sic)].

39. *Cettia diphone canturians* BMNH 1914.6.12.419, Macau, December 1902, coll. No. none, OL; BMNH 1914.6.12.418, Macau, 15 January 1902, coll. No. 15, OL [originally identified as *Larvivora sibilans* and previously stored as data-less unregistered duplicate; subsequent registration].

40. *Muscicapa griseisticta* BMNH 1914.5.6.52, Macau, 29 April 1902, coll. No. 64, OL.

42. *Niltava hainana* BMNH 1914.5.6.95, male, Macau, 10 April 1903 [in register 25 Oct. 1902], coll. No. none, OL.

43. *Muscicapa thalassina thalassina* BMNH 1914.5.6.192, Macau, 4 January 1902, coll. No. none; BMNH 1914.5.6.721, Macau, 7 January 1902, coll. No. 11, OL.

[44. *Muscicapa dauurica dauurica* BMNH 1914.5.6.72, Macau, 19 April 1902, coll. No. none.]

45. *Niltava macgrigoriae signata* BMNH: 1914.5.6.190, Macau, 11 February 1902, coll. No. none.

50. *Ficedula narcissina* ? *narcissina* BMNH 1914.5.6.122, "female", Macau, 21 April 1902, coll. No. none.

53. *Saxicola torquata stejnegeri* BMNH 1914.6.12.420, Macau, 3 February 1903, coll. No. none, OL.

57. *Copsychus saularis prosthopellus* BMNH 1914.7.16.396, male, Macau, 28 February 1902, coll. No. 33, OL.

58. *Turdus dissimilis hortulorum* BMNH 1914.7.16.93, Macau, 11 December 1901, coll. No. none.

59. *Turdus merula mandarinus* BMNH 1914.7.16.153, Macau, 5 February 1902, coll. No. 25, OL; BMNH 1914.9.12.2 [register number refers to a Crested Myna in the register; see above], Macau, 5 February 1902, coll. No. 25, OL.

60. *Turdus cardis* BMNH 1914.7.16.139, Macau, 17 January 1902, coll. No. none.

62. *Monticola solitarius pandoo* BMNH 1914.7.16.214, Macau, 23 January 1902, coll. No. [?] [not found].

64. *Lonchura punctulata topela* BMNH 1914.9.3.654, Macau, 5 March 1902, coll. No. 39, OL.

68. *Carduelis sinica sinica* BMNH 1914.9.3.24, Macau, 26 February 1902, coll. No. 32, OL; BMNH 1914.9.3.25, Macau, 3 February 1903, coll. No. none, OL.

70. *Emberiza fucata fucata / kuatunensis* BMNH 1914.9.3.310, Macau, 3 March 1902, coll. No. [?] [not found].
71. *Emberiza spodocephala spodocephala / sordida* BMNH 1914.9.3.518, male, Macau, 7 April 1902, coll. No. 55, OL.
72. *Emberiza aureola* ssp. BMNH 1914.9.3.366, female, Macau, 1 October 1902, coll. No. none, OL
77. *Dendronanthus indicus* BMNH 1914.8.20.177, Macau, 20 April 1903, coll. No. none, OL.
78. *Anthus novaeseelandiae* ssp. BMNH 1914.8.20.227, Macau, 2 March 1902, coll. No. 35, OL.
79. *Anthus hodgsoni yunnanensis* BMNH 1914.8.20.195, Macau, 8 January 1902, coll. No. none; BMNH 1914.8.20.196, adult, Macau, 15 February 1902, coll. No. [?] [not found].
80. *Anthus cervinus* BMNH 1914.8.20.228, Macau, 5 March 1902, coll. No. 38, OL.

[81. *Alauda arvensis* ssp. BMNH 1914.8.20.339, male, Macau, [no date], coll. No. [?] [not checked in collection]].

83. *Dicaeum cruentatum cruentatum* BMNH 1914.8.15.64, male, Macau, [no date], coll. No. none; BMNH 1914.8.15.65, male, Macau, January 1902, coll. No. none; BMNH 1914.8.15.66, female, Macau, January 1902, coll. No. none; BMNH 1914.8.15.67, female, Macau, 20 February 1903, coll. No. none, OL.
85. *Jynx torquilla chinensis* BMNH 1914.4.8.405, Macau, 15 February 1902, coll. No. none.
93. *Caprimulgus monticolus amoyensis* BMNH 1914.4.8.53, Macau, 8 December 1902, coll. No. none.
95. *Cuculus saturatus* ssp. BMNH 1914.4.8.181, Macau, 15 April 1902, coll. No. 57, OL; BMNH 1914.4.8.119, Macau, 8 April 1903, coll. No. none, OL [originally id. as *C. micropterus*].
96. *Cuculus micropterus micropterus* BMNH 1914.4.8.120, “female with egg”, Macau, 10 May 1903, coll. No. none, OL; BMNH 1914.4.8.121, male, Macau, 20 May 1903, coll. No. none, OL; BMNH 1914.4.8.429, Macau, 20 April 1902, coll. No. [?] [not found].
98. *Cacomantis merulinus querulus* BMNH 1914.4.8.65, female [lacks head], Macau, March 1903, coll. No. none, OL; BMNH 1914.4.8.66, Macau, 17 April 1901, coll. No. 6a, OL; BMNH 1914.4.8.67, male, Macau, 1 May 1903, coll. No. none, OL; BMNH 1914.4.8.68, “female with egg”, Macau, 1 May 1903, coll. No. none, OL; BMNH 1914.4.8.69, “female with egg”, Macau, 1 May 1903, coll. No. none, OL; BMNH 1914.4.8.72, male, Macau, 20 May 1903, coll. No. none, OL; BMNH 1914.4.8.73, Macau, 2 April 1902, coll. No. 52, OL.

[103. *Asio flammeus flammeus* BMNH 1908.1.4.48, Macau, [no date], coll. No. [?] [not checked in collection]].

[104. *Ketupa zeylonensis orientalis* BMNH 1908.1.4.47, Macau, [no date], coll. No. [?] [not checked in collection]].

114. *Streptopelia tranquebarica humilis* BMNH 1908.1.2.67, female, Macau, 16 April 1903, coll. No. none, OL.
115. *Streptopelia chinensis chinensis* BMNH 1908.1.2.66, Macau, March 1903, coll. No. none, OL.
119. *Francolinus pintadeanus pintadeanus* BMNH 1907.12.31.193, male, Macau, 24 February 1902, coll. No. none; BMNH 1907.12.31.265, Macau, 22 February 1903, coll. No. none, OL.
123. *Porzana pusilla pusilla* BMNH 1908.1.8.386, male, Macau, 6 October 1901, coll. No. [?] [not found].
124. *Amaurornis akool coccineipes* BMNH 1908.1.8.466, Macau, 17 April 1902, coll. No. 59, OL.
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New and noteworthy records for some endemic and threatened birds of the Atlantic forest of north-eastern Brazil

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The Atlantic forest of north-eastern Brazil includes all forest situated north of the São Francisco River in the states of Alagoas, Pernambuco and Paraíba (Silva & Tabarelli 2000). It occupies an area of *c.* 35,000 km^2 and has been identified as an important area of endemism in South America (Prance 1987). Despite its biological importance, most of the Atlantic Forest of north-eastern Brazil has been replaced by agriculture, and only *c.* 2% of its original area remains, in small fragments that suffer from selective logging and poaching (Brown & Brown 1992, Ranta *et al.* 1998).

This area harbours a rich avifauna, with 434 species (S.A. Roda unpubl. data), and seven endemics (Stattersfield *et al.* 1998). Although this area harbours a low number of endemic species relative to the rest of the Atlantic forest, it holds the most threatened species of the Atlantic forest biome (Collar *et. al.* 1992, 1994, BirdLife International 2000).

Of endemics, four species (Alagoas Foliage-gleaner *Phylidor novaesi*, Alagoas Antwren *Myrmotherula snowi*, Orange-bellied Antwren *Terenura sicki*, and Alagoas Tyrannulet *Phylloscartes ceciliae*) are restricted to the forest on the slopes of Alagoas and Pernambuco, above 500 m (Collar *et. al.* 1992). Another endemic, the Alagoas Curassow *Mitu mitu*, is confined to the flat lowland forest and is now considered extinct in the wild (BirdLife International 2000). This is not surprising since sugar-cane plantations have replaced virtually all lower altitude forest (Teixeira 1986).

Herein we review the distribution of some endemic and threatened species of the Atlantic forest of the north-eastern Brazil. This is based on literature surveys, studies in the Ornithological Collection of the Universidade Federal de Pernambuco (UFPE), lists of specimens housed at the American Museum of Natural History, New York (AMNH), and our field-work in Alagoas (AL) and Pernambuco (PE) in recent years. For simplicity, we list the first published reference for each species in the localities cited. The appendix lists the localities with their geographical coordinates, some of which were taken from Paynter & Traylor (1991) and Vanzolini (1992).

In each account we list the species' global status (BirdLife International 2000) as follows: Critically endangered (CR), Endangered (EN), Vulnerable (VU) and Lower risk/near threatened (LR/nt).

Species accounts

WHITE-NECKED HAWK *Leucopternis lacernulata* (VU)

This Atlantic forest endemic ranges from AL to Santa Catarina (Sick 1997, Sibley & Monroe 1990). In the Atlantic forest of north-eastern Brazil, it was previously known from Usina Sinimbu (Pinto & Camargo 1961) and Quebrângulo (A. Studer *in* Collar *et al.* 1992), both AL; and Reserva Biológica Guaribas, Paraíba (PB) (Almeida & Teixeira 1995). On 19 February 2000 we observed one over the forest fragments at Engenho Coimbra, AL. The alleged further record from PB, based on popular historical account (Pacheco & Whitney 1995), should be discarded (L. F. Silveira, *per* J. F. Pacheco *in litt.*).

GOLDEN-TAILED PARROTLET *Touit surda* (EN)

Known from the coastal lowlands and adjacent highlands of eastern Brazil, from Paraíba to southern São Paulo (Sick 1997, Collar *et al.* 1992, Sibley & Monroe 1990, BirdLife International 2000). In the north-eastern Atlantic forest, it was recorded at Parque de Dois Irmãos, PE (Berla 1946), Usina Sinimbu, AL (Pinto 1954), and

Mamanguape, PB (Pinto & Camargo 1961). In PE, it was not observed for 42 years, but it was recently recorded in two localities in the northern part of the state: Refúgio Ecológico Charles Darwin and Usina São José (Telino-Júnior *et al.* 2000). Between 9 July and 2 August 2000, we observed flocks with up to six individuals over the forest and sugar cane plantations at Engenho Coimbra, AL.

TAWNY PICULET *Picumnus fulvescens* (VU)

The Tawny Piculet occurs in NE Brazil in the states of PB, PE and AL (Sick 1997, Sibley & Monroe 1990, BirdLife International 2000). Additionally, in PB it was recorded at Reserva Biológica Guaribas (Almeida & Teixeira 1995), and in AL it was reported at Fazenda Pedra Talhada and Fazenda Riachão do Cravo (Almeida 1992). AMNH possesses three specimens taken in PE by Emil Kaempfer on 9 February 1927 at Brejão (AMNH 242767), 7 February 1927 at Garanhuns (AMNH 242765), and 6 March 1927 at Palmares (AMNH 242766). Also, UFPE obtained two specimens from Brejo dos Cavalos, PE (UFPE 425 and 637). We observed some individuals in bushes near a pond next to the forest at Mata do Pinto, AL on 16 November 2001, and 10 November 2001 along the forest edge at Mata do Estado, PE.

PLAIN SPINETAIL *Synallaxis infuscata* (CR)

This endemic species of the Atlantic forest of north-eastern Brazil was originally described from Usina Nossa Senhora do Carmo, PE (Pinto 1950). In AL, Pinto (1954) recorded it at Fazenda Canoas and São Miguel dos Campos; more recently, Pacheco & Gonzaga (1995) reported the occurrence of the Plain Spinetail at Murici and Quebrângulo, both AL. UFPE obtained 13 specimens from PE: UFPE 347, 396, 431, 657, 661, 662, 673, 738, 876, 885, and 1584 (Brejo dos Cavalos), UFPE 956 (Reserva Biológica de Saltinho), UFPE 2536 (Taquaritinga do Norte). AMNH obtained two specimens taken by Emil Kaempfer at Palmares, on 9 March 1927 (AMNH 243246 and 243247). We observed some individuals in the forest edge at Engenho Água Azul, PE (25 May 1999), Mata do Estado, PE (10 October 2000), Usina Frei Caneca, PE (8 June 1999), and Reserva Biológica de Caetés, PE (5 April 1999). We also saw it on 19 February 2001 at the Engenho Coimbra, AL.

ALAGOAS ANTWREN *Myrmotherula snowi* (CR)

The Alagoas Antwren (taxonomic level follows Whitney & Pacheco 1997) is known only from the type locality, "Serra Branca", Murici, AL (Teixeira & Gonzaga 1985). Between 18 and 20 October 1999 we found the Alagoas Antwren at Mata do Estado, PE extending its range *c.* 500 km northward. We captured three individuals: one adult male (UFPE 2034), another male, with intermediate plumage between brown and the adult dark grey plumage (UFPE 2061), and an adult female (UFPE 2064). We observed and captured *M. snowi* along two small streams in the interior of the forest. However, we did not register its presence in mixed flocks, although Teixeira & Gonzaga (1985) reported that *M. snowi* seems to be a common species in flocks with White-flanked Antwrens *Myrmotherula axillaris*. According to Teixeira & Gonzaga (1985), the absence of records of *M. snowi* in the lowland forest of north-east Brazil, where investigations have been concentrated, indicates that this species is restricted to upland forest. Our record of *M. snowi* at Mata do Estado, situated at *c*. 515 m a.s.l., supports this species' occurrence in the fragmented upland semi-humid forest located > 500 m in the north-east. These fragments may represent the only habitat for *M. snowi*, as suggested by Whitney & Pacheco (1995).

ORANGE-BILLED ANTWREN *Terenura sicki* (EN)

The Orange-billed Antwren is known from "Serra Branca" (Teixeira & Gonzaga 1983), Novo Lino, Quebrângulo (Teixeira 1987), and Reserva Biológica de Pedra Talhada (BirdLife International 2000), all AL. It was also recorded at Engenho Água Azul, PE (Willis & Weinberg 1990). We observed and tape-recorded it in clearings and in forests with Rufous-winged Antwren *Herpsilochmus rufimarginatus* at Mata do Estado, PE, on 18 October 1999, and between 8 and 10 November 2001. We tape-recorded it at Engenho Coimbra, AL, on three occasions: beside a small road inside the forest, forming mixed-species flocks with Golden-spangled Piculet *Picumnus exilis*, Olivaceous Woodcreeper *Sittasomus griseicapillus,* Streaked Xenops *Xenops rutilans,* Red-necked Tanager *Tangara cyanocephala,* Yellow-backed Tanager *Hemithraupis flavicollis,* Flame-crested Tanager *Tachyphonus rufus*, and Yellow-olive Flycatcher *Tolmomyias sulphurescens* on 23 April 2000; inside the forest with White-flanked Antwren *Myrmotherula axillaris*, Long-billed Gnatwren *Ramphocaenus melanurus* and White-eyed Tody-tyrant *Hemitriccus zosterops* on 24 July 2000; and forming a mixed-species flock with Rufous-winged Antwren, Yellow-backed Tanager and Bananaquit *Coereba flaveola* on 14 November 2001.

SCALLOPED ANTBIRD *Myrmeciza ruficauda* (EN)

The Scalloped Antbird ranges from PB, to Bahia and eastern Minas Gerais, north of Espírito Santo (Sick 1997, Ridgely & Tudor 1994, Sibley & Monroe 1990). In the north-eastern Atlantic Forest it is known from PB at Reserva Biológica Guaribas and Mamanguape (Almeida & Teixeira 1995), PE at Usina São José (Berla 1946), Fazenda São Bento (Pinto 1940), and Brejo dos Cavalos (A. G. M. Coelho pers. comm.), and AL at Usina Sinimbu, Fazenda Canoas, São Miguel dos Campos (Pinto 1954), Murici, Reserva Biológica de Pedra Talhada, Usina Serra Grande, and Usina Utinga Leão (BirdLife International 2000). UFPE obtained six specimens: UFPE 22 (Engenho Jundiá, PE), UFPE 1984 (Usina Frei Caneca, PE), UFPE 3688 and 3689 (Estação Ecológica do Tapacurá, PE), and UFPE 3248 and 3265 (Engenho Coimbra). We observed it near the forest edge at Reserva Biológica de Saltinho, PE on 20 June 2000. On 26 May 1999 we observed *M. ruficauda* following a swarm of army ants with Red-stained Woodpecker *Veniliornis affinis,* Straight-billed Woodpecker *Xiphorhynchus picus*, White-backed Fire-eye *Pyriglena leuconota*, Black-cheeked Gnateater *Conopophaga melanops*, and Pale-breasted Thrush *Turdus leucomelas* at Engenho Água Azul and Usina Frei Caneca, both PE. We tape-recorded it between 13 and 20 October 1999, and 8 and 10 November 2001, in the interior of the forest, with White-backed Fire-eye and Black-cheeked Gnateater. In AL, we tape-recorded it at Engenho Coimbra on 18 February and 30 September 2000, and on 14 November 2001.

ALAGOAS TYRANNULET *Phylloscartes cecilliae* (CR)

The Alagoas Tyrannulet is known from Reserva Biológica de Murici, Quebrângulo (Teixeira *et al.* 1988), both AL and Brejo dos Cavalos, PE (A. G. M. Coelho pers. comm.). UFPE obtained a specimen from Engenho Coimbra, AL (UFPE 3187). On 11 July 2000 we observed the Alagoas Tyrannulet at Engenho Coimbra forming mixed-species flocks with Seven-coloured Tanager *Tangara fastuosa,* Red-necked Tanager *Tangara cyanocephala,* Opal-rumped Tanager *Tangara velia,* Blue Dacnis *Dacnis cayana,* Flame-crested Tanager *Tachyphonus cristatus*, and Green Honeycreeper *Chlorophanes spiza*. Also, on 10 November 2001 we observed *P. ceciliae* with Seven-coloured Tanager, Red-necked Tanager and Yellow-backed Tanager *Hemithraupis flavicollis* at Mata do Estado, PE.

WHITE-WINGED COTINGA *Xipholena atropurpurea* (EN)

This Atlantic forest endemic has been previously reported at Goiana, PE (Lamm 1948), Mamanguape (Pinto & Camargo 1961), and Reserva Biológica Guaribas, both PB (Almeida & Teixeira 1995). Teixeira & Almeida (1997) listed several localities where it has been recorded in AL (Reserva Biológica de Pedra Talhada, "Serra Branca", Fazenda Santa Justina, Grota do Niquim, Grota do Taboado, Grota do Azevedo, Grota do Quebra Cachimbo, Grota do Partício, Fazenda Prata, and Usina Sinimbu), PE (São Lourenço da Mata, Lagoa do Ouro, Recife, Cabo, Palmares, Catende, Quipapá, and Garanhuns), and PB (Camaratuba and Uruba). On 22 July 2000, we observed two individuals inside the forest at Engenho Coimbra. Also, a specimen is housed at Museu de História Natural do Parque de Dois Irmãos, Recife, from Água Preta, PE.

SEVEN-COLOURED TANAGER *Tangara fastuosa* (EN)

This endemic of the Atlantic forest of north-eastern Brazil is known from Quipapá (Forbes 1881), Engenho Pirajá (Berla 1946), Cabo (Pinto 1940), Recife (Lamm 1948), Quebrângulo (Pinto & Camargo 1961), Reserva Biológica do Tapacurá (Azevedo-Júnior 1990), Alagoa Grande, João Pessoa, São Miguel dos Campos, Murici (Collar *et al.* 1992), Abreu e Lima, Água Preta, Barreiros, Camaragibe, Igarassú, Jaboatão dos Guararapes, Maraial, Paulista, Rio Formoso, São Lourenço da Mata, Caruaru (Farias 1996), Parque de Dois Irmãos (Azevedo-Júnior *et al.* 1998), Reserva Biológica de Saltinho, Engenho Mamucaba, and Mata da Gia (Neves *et al.* 2000). UFPE obtained four specimens from Recife (UFPE 1675, 2774, 2776, 2881), nine from Brejo dos Cavalos (UFPE 391, 416, 573, 708, 732, 741, 742, 758, 1076), one from Parque de Dois Irmãos (UFPE 34), and two from Engenho Coimbra (UFPE 3312 and 3313). We observed this bird at Engenho Água Azul (between 23 and 30 May

1999), Usina Frei Caneca (between 7 and 10 June 1999), Mata do Estado (between 12 and 20 October 2000), Engenho Triunfo (between 4 and 6 August 1999), Engenho Sacramento, (between 27 and 30 January 2000), and Taquaritinga do Norte (between 21 and 23 January 2000), all PE, and Mata do Pinto (12 February 2000, 6 July 2000, 20 February 2001, 14 November 2000), Engenho Coimbra (on some occasion between 9 July and 1 October 2000, and 19 Febuary 2001) as well as in the gardens of Usina Serra Grande (12 May 2000), all AL.

FORBES' BLACKBIRD *Curaeus forbesi* (CR)

Forbes' Blackbird occurs in eastern Brazil, in PE, AL, and south-eastern Minas Gerais (Sick 1997, Ridgely & Tudor 1989, Sibley & Monroe 1990). In the Atlantic forest of north-eastern Brazil, it is known from few localities. In PE, there are records at Macuca and Vista Alegre (Forbes 1881) and Usina São José (Berla 1946). The records for AL are from Quebrângulo (Short & Parkes 1979), Matriz do Camaragibe, and Murici (Collar *et al.* 1992). On 25 May 1999 we observed five in a valley near the forest at Engenho Água Azul, PE. We observed a group of 12 in a swampy area at Mata do Estado, PE. In Alagoas, we registered this species on two occasions (19 July 2001 and 15 November 2001) at Engenho Coimbra in a sugar-cane plantation and in a pasture near the forest.

YELLOW-FACED SISKIN *Carduellis yarrellii* (VU)

The Yellow-faced Siskin was reported from PE at Garanhuns (Forbes 1881), Quipapá (Reiser 1925), Fazenda São Bento (Pinto 1940), São Caetano, "50 miles south of Recife" (Lamm 1948: 282), Estação Ecológica do Tapacurá (Coelho 1979), Caruaru, Catimbau, Ibimirim, Reserva Biológica de Serra Negra (A. G. M. Coelho *in* Collar *et al.* 1992), Reserva Biológica de Saltinho, and Mata da Gia (Neves *et al.* 2000). In AL, it was recorded at Engenho Riachão (Pinto & Camargo 1961), Murici, and União dos Palmares (Collar *et al.* 1992). Also, there is a record from Mamanguape, PB (Pinto & Camargo 1961). AMNH possesses specimens taken by Emil Kaempfer on 13 February 1927 at Brejão (AMNH 244947), on 5 February 1927 (AMNH 244949), 6 February 1927 (AMNH 244952) and 7 February 1927 (AMNH 244950, 244951) at Garanhuns, both PE. UFPE obtained three specimens from Recife (UFPE 2783, 2787 and 2805) and one from Rainha Isabel (UFPE 2991), both PE. On 20 November 1987, S. A. Roda observed a group of one male and two females in a 10 ha remnant of urban forest at "Granja Santo Antônio", Jaboatão dos Guararapes, PE. On 5 April 1999 R. C. Rodrigues observed *C. yarrellii* at Reserva Ecológica de Caetés, PE where this species is frequently released. These generally come from several regions in PE, where they have been confiscated by inspectors of the illegal animal trade.

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Appendix

Localities mentioned in the text with respective geographical coordinates.
States: Alagoas, AL; Paraíba, PB; Pernambuco, PE.

Locality	***State***	***Coordinates***
Engenho Coimbra	AL	09°59'S, 35°50'W
Fazenda Canoas	AL	09°28'S, 35°45'W
Fazenda Pedra Talhada	AL	09°17'S, 36°25'W
Fazenda Prata	AL	09°52'S, 36°09'W
Fazenda Riachão	AL	09°19'S, 36°28'W
Fazenda Santa Justina	AL	09°13'S, 35°31'W
Grota do Niquim	AL	09°48'S, 35°55'W
Grota do Patrício	AL	09°47'S, 36°05'W
Grota do Quebra Cachimbo	AL	09°47'S, 36°05'W
Grota do Taboado	AL	09°55'S, 35°59'W
Mata do Pinto	AL	09°01'S, 36°03'W
Murici	AL	09°18'S, 35°56'W
Novo Lino	AL	09°01'S, 35°40'W
Quebrângulo	AL	09°18'S, 35°56'W
Reserva Biológica de Pedra Talhada	AL	09°17'S, 36°25'W
São Miguel dos Campos	AL	09°47'S, 36°05'W
Serra Branca	AL	09°47'S, 36°50'W
União dos Palmares	AL	09°09'S, 36°01'W
Usina Serra Grande	AL	09°00'S, 36°03'W
Usina Simimbu	AL	09°59'S, 35°50'W
Usina Utinga Leão	AL	09°32'S, 35°50'W
Camaratuba	PB	06°39'S, 35°08'W
João Pessoa	PB	07°07'S, 34°52'W
Mamanguape	PB	06°50'S, 35°07'W
Reserva Biológica Guaribas	PB	06°45'S, 35°12'W
Uruba	PB	06°50'S, 35°07'W
Abreu e Lima	PE	07°54'S, 34°54'W
Água Preta	PE	08°42'S, 35°31'W
Barreiros	PE	08°49'S, 35°11'W
Brejão	PE	09°03'S, 36°29'W
Brejo dos Cavalos	PE	08°21'S, 36°02'W
Cabo	PE	08°17'S, 35°02'W
Camaragibe	PE	08°01'S, 34°58'W
Caruaru	PE	08°14'S, 36°10'W
Catende	PE	08°40'S, 35°43'W
Engenho Sacramento	PE	08°41'S, 35°24'W
Mata da Gia	PE	08°49'S, 35°08'W
Garanhuns	PE	08°54'S, 36°29'W
Goiana	PE	07°33'S, 34°59'W
Igarassú	PE	07°50'S, 34°54'W

Refúgio Charles Darwin	PE	07°48’S, 34°27’W
Usina São José	PE	07°50’S, 34°54’W
Jaboatão dos Guararapes	PE	08°10’S, 35°00’W
Granja Santo Antônio	PE	08°10’S, 35°00’W
Usina Frei Caneca	PE	08°42’S, 35°50’W
Lagoa do Ouro	PE	09°08’S, 36°28’W
Macuca	PE	08°54’S, 36°29’W
Maraial	PE	08°45’S, 35°44’W
Engenho Pirajá	PE	08°19’S, 35°06’W
Palmares	PE	08°41’S, 35°36’W
Paulista	PE	07°56’S, 34°52’W
Reserva Ecológica de Caetés	PE	07°55’S, 34°55’W
Quipapá	PE	08°50’S, 36°02’W
Rainha Isabel	PE	09°14’S, 36°50’W
Recife	PE	08°03’S, 34°54’W
Parque Dois Irmãos	PE	07°55’S, 34°52’W
Rio Formoso	PE	08°39’S, 35°09’W
São Lourenço da Mata	PE	08°00’S, 35°03’W
Estação Ecológica do Tapacurá	PE	08°03’S, 35°13’W
Engenho Triunfo	PE	07°37’S, 35°27’W
Mata do Estado	PE	07°37’S, 35°30’W
Engenho Mamucaba	PE	08°34’S, 35°09’W
Reserva Biológica de Saltinho	PE	08°31’S, 34°52’W
Fazenda São Bento	PE	08°08’S, 35°13’W
Taquaritinga do Norte	PE	07°54’S, 36°01’W
Engenho Água Azul	PE	07°35’S, 35°22’W
Vicência	PE	07°40’S, 35°20’W
Engenho Jundiá	PE	07°40’S, 35°20’W
Usina Nossa Senhora do Carmo	PE	08°13’S, 35°25’W
Vista Alegre	PE	Not located

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Range extension for the Manu Antbird *Cercomacra manu* in north Brazil

by David Beadle, Arthur Grosset, Guy M. Kirwan & Jeremy Minns

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The Manu Antbird *Cercomacra manu* has a highly disjunct and localised range in south-west Amazonia. It was initially described from south-east Peru (Fitzpatrick & Willard 1990) and subsequently located in north-west Bolivia (Parker & Remsen 1987), Porangaba, Acre, and Alta Floresta, northern Mato Grosso, Brazil (Zimmer *et al.* 1997). The species' known range has recently been extended further east, as predicted would be the case by Parker *et al.* (1997), to Pinkaiti, Pará, Brazil (B. M. Whitney *in litt.*). *C. manu* occurs principally in *Guadua* bamboo thickets (Ridgely & Tudor 1994) but also in second-growth woodland adjacent to bamboo (Parker & Remsen 1987) and in tall riverine forest (Fitzpatrick & Willard 1990). At Alta Floresta it is common in bamboo fragments resulting from deforestation (A. Aleixo *in litt.* 2002).

On 5 February 2002 we found *C. manu* at Balneário Havaí, Guaraí, Tocantins, Brazil (08°50'S, 48°39'W). Three individuals, a mature male and two female-plumaged birds, were observed foraging in a stand of bamboo, contiguous with a small area of tall (< *c.*15 m) but fragmented gallery woodland along a tributary of the rio Tocantins, with modified cerrado either side of the gallery forest. The bamboo was a narrow-stalked *Guadua* species that provided an open understorey but formed a rather dense canopy, 2–3 m above ground. The birds moved through this canopy and in the occasional emergent trees. Behaviour closely recalled that described by Parker *et al.* (1997), who had already noted the species' ability to persist in tiny remnant patches of bamboo, as those birds observed by us foraged rather inconspicuously within a restricted area, the sexes keeping in reasonably close contact but relatively separate.

The male was slim-necked, with a rounded head and narrow-based dark bill. Its overall colour was sooty-black with distinctly browner-toned flight feathers. The lesser wing-coverts had a patchy but well-marked white bar formed by tips to some feathers, and there were some very small white spots on the median coverts. There was a very distinct and relatively large white dorsal patch on the mantle; the tail had three white uppertail spots, which were well defined but comparatively small and not particularly noticeable; the undertail was greyer with quite broad paler tips and outer webs to all rectrices. The female-plumaged birds, seen much more fleetingly than the male and at greater distances as they did not respond so readily to call playback, were much duller, with largely brown upperparts and a darker forecrown

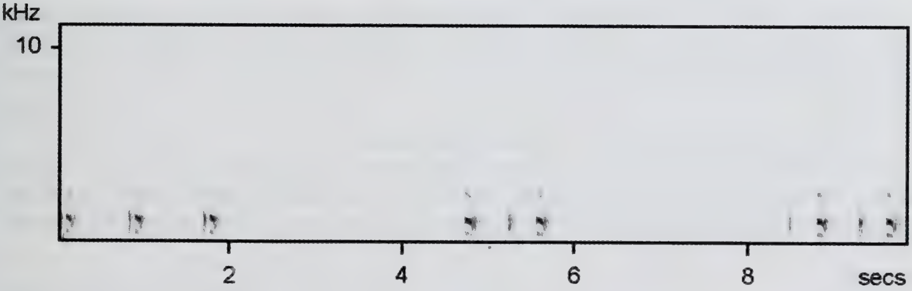

Figure 1. Natural song of Manu Antbird *Cercomacra manu*, recorded at Balneário Havaí, Guaraí, Tocantins, Brazil, 5 February 2002, by David Beadle. Recording made using a Sennheiser ME66 microphone and Sony TCM5000EV recorder. Sonogram prepared with Avisoft-SASLab Pro (Raimund Specht, Hauptstr. 52, D-13158, Berlin, Germany) using standard default parameters.

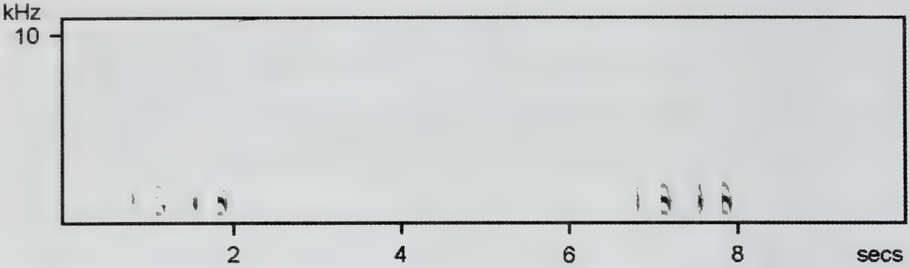

Figure 2. Song of Manu Antbird *Cercomacra manu* in response to playback, recorded at Balneário Havaí, Guaraí, Tocantins, Brazil, 5 February 2002, by Jeremy Minns. Recording made using a Sennheiser ME62 microphone, 25" parabolic reflector and Sony TCD-D10PROII recorder. Sonogram prepared with Avisoft-SASLab Pro (Raimund Specht, Hauptstr. 52, D-13158, Berlin, Germany) using standard default parameters.

and grey cheeks; there were some paler spots on the wing-coverts; the uppertail was unmarked but the undertail was not seen; and the underparts were grey with a small, white-streaked throat patch. The male was photographed, with difficulty, and appears as a black silhouette with a white patch on the wing-coverts. Both plumages are consistent with descriptions of *C. manu* in Ridgely & Tudor (1994).

DB recorded the natural song of the male and subsequently DB and JM recorded the same bird after playback of its own song. The usual vocalization was a very repetitive series of groups of 2–3 double notes, but occasionally it uttered a series of single notes. The song in response to playback appeared identical to the natural song (Figs. 1 and 2). We have compared this recording to the song of *C. manu*, recorded by JM at Alta Floresta. The Alta Floresta song is more complex but the same double-note sequence appears irregularly. Our Guaraí recordings were studied by B. Whitney, who confirmed the identification as a member of the *C. manu* complex, and this record extends the known range of the species 300 km east from Pinkaiti and over 770 km east-northeast from Alta Floresta.

JM's recordings will be archived in the Natural Sound Archive, The British Library, London, and the Arquivo Sonoro Prof. Elias Coelho, Universidade Federal de Rio de Janeiro, Rio de Janeiro.

Acknowledgements

We thank Bret Whitney for studying our recordings, confirming the identification of the species and drawing our attention to his, as yet, unpublished observations. Phyllis and Morton Isler, Fernando Pacheco, Ricardo Parrini and Kevin Zimmer also kindly listened to our recordings and made helpful comments.

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Records of birds breeding collected by Dr W. Ansorge in Angola and Gabon

by W. R. J. Dean, M. P. Walters & R. J. Dowsett

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From 1903 to 1909, Dr. W.J. Ansorge (1850-1913, a medical doctor, traveller and author of *Under the African Sun* (1899)), in a series of expeditions, collected a number of birds and their eggs in southern and central Angola, in south-western Gabon, Guinea-Bissau and in the Cape Verde Islands. The major portion of his earlier collections of birds, from 1903 to 1906, went to the Walter Rothschild Zoological Museum at Tring, and subsequently to the American Museum of Natural History (Traylor 1963). Some of Ansorge's earlier collections of birds and eggs from Angola in 1905, and his later collections of birds, from Gabon in 1907, and Angola, Guinea-Bissau and the Cape Verde Islands during 1908 and 1909, went to the British Museum (Natural History) and are now at The Natural History Museum, Tring. Ansorge's collections from Gabon in 1907 (along the lower Ogooué river) were never published (Rand *et al.* 1959). RJD knows of 84 avian taxa described on the basis of Ansorge's holotypes from these two countries (76 from Angola and 8 from Gabon). Nearly all these specimens are in either The Natural History Museum, Tring (BMNH) or American Museum of Natural History (AMNH). One of Ansorge's earlier collections, about 200 sets of eggs largely from southern Angola and Gabon, is now in the BMNH. Data from this collection were not cited by Pinto (1983), and WRJD was not aware of its existence when compiling the text for the *Birds of Angola* (Dean 2000). Some, but not all, of these breeding records were listed by Traylor (1963), but often incompletely, either without locality or without date.

A number of the specimens collected by Ansorge provide the only breeding records for some species for Angola, and significantly increase the number of breeding records and dates for others. The records from Gabon are fewer, but do include breeding records for the poorly-known Long-legged Pipit *Anthus pallidiventris* (for which the eggs have never been described) and several other species of interest.

Angola

RED-BILLED FRANCOLIN *Francolinus adspersus*
Two clutches, both c/2, collected at Dongoena (17° 01' S, 14° 45' E), Cunene Province, on 11 and 19 April 1906, supplement the breeding data given by Dean (2000).

LESSER MOORHEN *Gallinula angulata*
c/4 collected at Qué (Qué R.) (14° 28' S, 14° 47' E), Huíla, on 15 January 1906, c/6 collected at Catequero, 19 March 1906, and c/5 collected at Dongoena on 31 March 1906 are the only records of eggs of this species for Angola (Dean 2000).

BLACKSMITH PLOVER *Vanellus armatus*
c/2 collected at Dongoena on 11 April 1906.

CROWNED PLOVER *Vanellus coronatus*
A single egg collected at Dongoena on 19 April 1906 is the only record of eggs for Angola (Dean 2000). In Zambia, the majority of 111 records are of laying July to October, and all but four of 76 clutches were c/2 or c/3, so a single egg is probably incomplete (Colebrook-Robjent & Dowsett unpublished).

DOUBLE-BANDED SANDGROUSE *Pterocles bicinctus*
A single egg, probably an incomplete clutch, collected at Namibe town (15° 12' S, 12° 09' E), Namibe, on 7 May 1906, supplements the sparse data in Dean (2000).

CAPE TURTLE DOVE *Streptopelia capicola*
Two clutches, both c/2, collected at Dongoena on 28 March and 4 April 1906.

BLUE-SPOTTED WOOD-DOVE *Turtur afer*
C/2, collected at Dondo, Cuanza Norte (09° 41' S, 14° 25' E) on 23 July 1908 supplements data in Dean (2000). This record was listed by Traylor (1963) without locality.

ROSY-FACED LOVEBIRD *Agapornis roseicollis*
Four eggs, collected at Catequero (16° 34' S, 14° 54' E), Cunene, on 19 March 1906. Pinto (1983) gave only one breeding record of this relatively common species.

SCHALOW'S TURACO *Tauraco schalowi*
One egg, no longer intact, taken from the oviduct of a female collected at Chissamba (12° 10' S, 17° 20' E), Bié, on 19 November 1904. The only other records of breeding are a nestling collected on the Luce River, 11 Oct (Bowen 1932), and a juvenile collected at Andulo in November (Pinto 1983).

GREY GO-AWAY-BIRD *Corythaixoides concolor*
c/1 and c/2 collected 2 April 1906, c/3 collected 19 April 1906 and c/3 collected 21 April 1906 at Dongoena, supplement the breeding records in Dean (2000).

YELLOWBILL (GREEN MALKOHA) *Ceuthmochares aereus*
A nest collected at N'Dalatando, Cuanza Norte (09° 19' S, 14° 57' E) on 6 November 1908. Listed by Traylor (1963). A female collected on the same date at the same locality (BMNH reg. no. 1910.5.6.327) was possibly taken at the nest.

SQUARE-TAILED NIGHTJAR *Caprimulgus fossii*
Two clutches, both c/2, collected at Benguela town on 14 September and 2 October 1904 respectively, add to the only other egg record for Angola (Braun 1934).

FIERY-NECKED NIGHTJAR *Caprimulgus pectoralis*
One egg, probably an incomplete clutch, collected at Benguela town, on 25 September 1904, supplements the data in Traylor (1963), Pinto (1983) and Dean (2000).

RUFOUS-CHEEKED NIGHTJAR *Caprimulgus rufigena*
One egg, probably an incomplete clutch, collected at Benguela town, Benguela, on 19 September 1904. No egg records were given by Dean (2000).

PENNANT-WINGED NIGHTJAR *Macrodipteryx vexillarius*
Two clutches, both c/2, collected at Benguela town on 22 September 1904, add to the number of egg records given in Dean (2000).

RED-FACED MOUSEBIRD *Urocolius indicus*
Two single eggs without date, c/2 without date collected at Benguela, and c/3 collected 12 October 1904 at Catumbela, Benguela Province, are the only egg records for Angola.

PURPLE ROLLER *Coracias naevius*
One clutch of three eggs, collected at Catequero (16° 34' S, 14° 54' E), Cunene Province, on 18 March 1906, is the only breeding record for Angola.

RACKET-TAILED ROLLER *Coracias spatulatus*
A single egg, doubtless an incomplete clutch, collected at Benguela town (12° 35' S, 13° 25' E), Benguela Province, on 13 September 1904. No egg records were given by Dean (2000). Breeding starts in September in Zambia.

RED-BILLED HORNBILL *Tockus erythrorhynchus*
A single egg, collected at Dongoena on 5 April 1906. Traylor (1963) noted coincidentally that nestlings were collected in the same locality and month.

GOLDEN-TAILED WOODPECKER *Campethera abingoni*

A single egg collected at N'Dalatando on 4 August 1908. Dean (2000) had no egg records for this common and widespread species.

AFRICAN PITTA *Pitta angolensis*

A single egg, together with a nest collected at N'Dalatando on 6 November 1908. An adult male (BMNH reg. no. 1910.5.6.454) was collected at the same locality on the same day, possibly at the nest. The egg record was listed by Traylor (1963) without locality.

WIRE-TAILED SWALLOW *Hirundo smithii*

c/3 collected at Foz do Cavaco on 19 October 1905 is the only record of eggs for Angola (Dean 2000). In Zambia there are egg-laying records for all months January-October, mainly August-October (n = 109).

BLACK CUCKOOSHRIKE *Campephaga flava*

A single egg, probably an incomplete clutch, collected at Gombo Sassenge (11° 54' S, 17° 36' E), Bié, on 3 November 1904, is the only record of eggs for Angola (Dean 2000).

YELLOW-BELLIED GREENBUL *Chlorocichla flaviventris*

c/2, without date, collected at Benguela. The only definite breeding and egg record for Angola (Dean 2000).

RUFOUS-TAILED PALM THRUSH *Cichladusa ruficauda*

There are few breeding records for this relatively common near-endemic species (Dean 2000). A single egg, probably an incomplete clutch, collected Foz do Cavaco (12° 34' S, 13° 25' E), Benguela, on 19 October 1905.

KALAHARI SCRUB ROBIN *Cercotrichas paena*

c/3, without date, collected at Benguela, is the only definite breeding record (Dean 2000).

GROUNDSCRAPER THRUSH *Psophocichla litsipsirupa*

c/3 collected at Benguela town on 11 October 1904, and c/3 collected at Caiala, Bié, on 13 October 1904 (locality not given in the accessions register but Ansorge collected at this locality on this day) add to the data given in Dean (2000).

AFRICAN THRUSH *Turdus pelios*

c/3 collected at N'Dalatando on 8 December 1908 adds to the data given by Dean (2000). This record was listed by Traylor (1963) without precise locality.

KURRICHAINE THRUSH *Turdus libonyana*
Three clutches, all c/3, collected at Caiala, two on 13 and one on 16 October 1904 (locality not given in the accessions register but Ansorge collected at this locality on these days), add significantly to the egg records in Dean (2000).

LONG-BILLED CROMBEC *Sylvietta rufescens*
c/3 collected, together with the adult female (AMNH reg. no. 599227) on the Cavaco river, Benguela on 3 November 1905. This adds to the single breeding record of November, without locality, given by Traylor (1963) (possibly the same record, but if so, is not ascribed to Ansorge).

AFRICAN PARADISE FLYCATCHER *Terpsiphone viridis*
Two eggs collected at Caiala (12° 19' S, 17° 07' E), Bié, on 15 October 1904, provide another record of eggs of this common species. Listed as Rufous-vented Paradise-Flycatcher *Terpsiphone rufocinerea* in accessions register, but this species does not occur at this locality.

RUFOUS-VENTED PARADISE FLYCATCHER *Terpsiphone rufocinerea*
c/3 collected at N'Dalatando on 2 December 1908, together with an adult female (BMNH reg. no. 1909.8.5.45). provides the only egg record for Angola. Nest in coffee tree about 2 m ("6 feet" on label) from the ground.

BLACK-AND-WHITE SHRIKE FLYCATCHER *Bias musicus*
c/2 collected N'Dalatando on 13 November 1908 is the only egg record for Angola.

WHITE-TAILED SHRIKE *Lanioturdus torquatus*
Two eggs collected at Namibe [Mossamedes] on 27 February 1906, together with the adult (AMNH reg. no. 608459). This is the only breeding record for Angola for this fairly common species.

BLACK-FACED BABBLER *Turdoides melanops*
There are very few breeding records for this fairly common but range-restricted resident of dry woodlands (Maclean 1993, Dean 2000). Three clutches; c/3 collected on 28 March 1906 at Tala Kilau, near Donguena (17° 01' S, 14° 45' E), c/3 collected on 14 April 1906 at Ponangkuma, near Donguena, and c/2 collected on 19 April 1906 at Ponangkuma. The eggs measure 26.1-27.5 x 18.3-19.2 (26.5 x 18.7) and are a rather faded turquoise, with a finely noduled shell surface.

CAPE PENDULINE TIT *Anthoscopus minutus*
c/5 collected on the Cavaco river, Benguela, on 4 November 1904, together with a male (AMNH reg. no. 683325) is the only egg record for Angola.

AMETHYST SUNBIRD *Chalcomitra amethystina*
A single egg, probably a complete clutch, collected at Caiala on 14 October 1904, adds to the single record of eggs in Dean (2000).

MARICO SUNBIRD *Cinnyris mariquensis*
c/2, without date, collected at Benguela town, is the only breeding record for Angola (Dean 2000).

PURPLE-BANDED SUNBIRD *Cinnyris bifasciata*
Five clutches, each c/2, all without dates, collected at Benguela town.

SUPERB SUNBIRD *Cinnyris superba*
A single egg collected at N'Dalatando on 30 December 1908 is presumably the record without locality listed by Traylor (1963).

NORTHERN PUFFBACK *Dryoscopus gambensis*
c/3 collected at N'Dalatando on 12 November 1908 is the only breeding record for Angola.

BROWN-CROWNED TCHAGRA *Tchagra australis*
A single egg, probably an incomplete clutch, and c/2 collected at Caiala on 14 and 17 October 1904, c/2 collected at Bingondo (12° 04' S, 17° 25' E), Bié, on 21 October 1904, and c/2 without date collected at Benguela supplement egg records in Dean (2000).

BLACK-CROWNED TCHAGRA *Tchagra senegala*
A single egg, probably an incomplete clutch, collected at Benguela on 2 October 1904, adds another record of eggs of this common species.

FORK-TAILED DRONGO *Dicrurus adsimilis*
A single egg, probably an incomplete clutch, collected at Benguela town on 10 October 1904. A number of records of eggs are given by Dean (2000)

CAPE GLOSSY STARLING *Lamprotornis nitens*
A single egg collected at N'Dalatando on 26 October 1908 is the only egg record for Angola. This is presumably the breeding record, without locality, referred to by Traylor (1963).

GREAT SPARROW *Passer motitensis*
A single egg, probably an incomplete clutch, without date, collected at Benguela town is the only egg record for Angola (Dean 2000).

RED-BILLED BUFFALO-WEAVER *Bubalornis niger*
Six eggs (two clutches?) and five clutches of three eggs, all collected at Dongoena; c/6 and c/3 on 2 April 1906, and the remainder on 14 April 1904. These are the only records of eggs for Angola (Dean 2000).

SCALY-FEATHERED FINCH *Sporopipes squamifrons*
Two clutches, c/3 and c/5 collected at Catequero, both on 17 March 1906, and two clutches collected at Humbe (16° 40' S, 14° 55' E), Cunene; c/4 on 23 March and c/3 on 26 March 1906. Dean (2000) had no breeding records at all for this common species.

WHITE-BROWED SPARROW-WEAVER *Plocepasser mahali*
Two clutches, both c/2, collected at Dongoena on 28 March 1906, supplement breeding data given in Dean (2000).

THICK-BILLED WEAVER *Amblyospiza albifrons*
A single egg and c/3 collected on 22 December, and 2 x c/3 on 30 December, all at N'Dalatando, add to the breeding data given by Dean (2000).

BLACK-NECKED WEAVER *Ploceus nigricollis*
A single egg collected at N'Dalatando on 21 December 1908 provides the only egg record for Angola for this not uncommon species. No definite breeding records for this species were given by Dean (2000).

SOUTHERN MASKED WEAVER *Ploceus velatus*
Four clutches collected at Chibemba (15° 46' S, 14° 04' E), Huíla, on 2 March 1906, six clutches collected at Kimakua (between Cahama and Humbe) (16° 30' S, 14° 25' E), Namibe, all on 14 March 1906; four clutches collected at Tuandiva (16° 32' S, 14° 44' E), Cunene, on 16 March 1906; one clutch collected at Humbe on 23 March 1906; one clutch collected at Dongoena on 31 March 1906. These supplement the already fairly extensive list of breeding records in Dean (2000).

RED BISHOP *Euplectes orix*
Two clutches, c/2 and c/3, both collected at Humpata (14° 57' S, 13° 16' E), Huila, on 16 February 1906, and two clutches, c/3 on 26 March 1906 and c/4, without date, collected at Humbe, supplement the fairly extensive list of breeding records in Dean (2000).

BLUE WAXBILL *Uraeginthus angolensis*
Five clutches; c/5, without date, collected at Humpata; c/6 collected at Catequero on 19 March 1906; c/5 collected at Humbe on 26 March 1906; and two clutches collected at Dongoena, c/1 on 31 March and c/3 on 14 April 1906. No breeding records for this common species were given by Dean (2000).

BLACK-THROATED CANARY *Serinus atrogularis*
C/3, and two single eggs, probably incomplete clutches, all collected at Humpata on 15 February 1906, and a single egg from the same locality on 26 March 1906 are the only definite breeding records for this species (Dean 2000).

GOLDEN-BREASTED BUNTING *Emberiza flaviventris*
C/2 collected at Gombo Sassenge on 2 November 1904 supplements the only other egg record (Bowen 1931).

Gabon

HAMERKOP *Scopus umbretta*
c/5 collected at Ngomo (Ugomo, Ngowo), Ogooué river (00°49’S, 09°58’E) on 9 August 1907.

FOREST FRANCOLIN *Francolinus lathami*
A single egg, probably an incomplete clutch, collected at Ngomo on 26 August 1907.

AFRICAN JACANA *Actophilornis africanus*
A single egg, clearly an incomplete clutch, collected at Anda, Lake Azingo (00° 35' S, 10° 02' E) in November 1907.

WATER THICK-KNEE *Burhinus vermiculatus*
c/2 collected at Lac Onange (= Lac Anengué) (*c.* 01°00’S, 10°05’E), on 13 July 1907.

WHITE-FRONTED PLOVER *Charadrius marginatus*
Six clutches; c/1 collected at Odimba, (Lake Ogamwe, 01°08’S, 10°00’E), on 4 July 1907; c/2 and c/3 collected at Ntungo (Lac Onange), Ogooué river (01°00’S, 10°05’E), 19 July 1907; c/2 collected at Lake (“Elivã”) Elvolo (Lac Onange, Ogooué river, 01°00’S, 10°05’E), 24 July 1907; c/2 and c/3 collected at Ngomo on 12 August 1907.

WHITE-HEADED PLOVER *Vanellus albiceps*
Five clutches; two c/3 collected at Odimba, Lake Ogamwe, on 2 July 1907; c/3 collected at Lac Onange, Ogooué river, on 5 July 1907; c/3 collected at Odimba, Lake Ogamwe, on 3 July 1907; c/3 collected at Ntungo on 17 July 1907.

LITTLE TERN *Sterna albifrons*
Ten clutches, 5 x c/2, 4 x c/3, c/4, all collected at Ngowo (i.e. Ngomo) on the Ogooué river on 12 August 1907. Clutches of more than three eggs are unusual in West Africa and this suggests that some of these eggs were incorrectly labelled. [c/3 is not unusual in W Africa, *pace* Urban *et al.* (1986), see, e.g. Hutson & Bannerman (1931),

Latour (1973)]. MPW examined these eggs and is of the opinion that the c/4 is not a clutch, but could be either four odd eggs or a c/3 with an egg from another clutch, either through egg-dumping in the nest, or a mix up when the eggs were accessioned by the museum. Three of the eggs are just similar enough to be the product of one female, but the 4th egg is markedly different, darker in ground colour and rounder in shape.

AFRICAN SKIMMER *Rynchops flavirostris*
Seventeen clutches, 5 x c/1, 7 x c/2, 5 x c/3, all collected at Ngowo on the Ogooué River, on 12 August 1907.

RED-EYED DOVE *Streptopelia semitorquata*
c/2 collected at Ntungo, Lac Onange, Ogooué river (probably Ogouma (Agouma) town, Nkomi river, 01° 32' S, 10° 11' E), on 17 July 1907.

GIANT KINGFISHER *Megaceryle maxima*
c/3 collected at Ngomo, on 10 August 1907.

PIED KINGFISHER *Ceryle rudis*
c/2 and c/5 collected on 19 July 1907, and c/4 collected on 26 July 1907 together with the adult (AMNH reg. no. 635841), all at Lac Onange, Ogooué river. Locality for the eggs given as Ntungo, Lake Owange (= Lac Onange), Ogooué river, but locality on the skin is given incorrectly as "Ulales Eliva Zango, Ogone River".

BLUE-BREASTED BEE-EATER *Merops variegatus*
C/3 and 3 x c/4 collected at Lac Onange, Ogooué river, all on 23 August 1907. One female (AMNH reg. no. 600138) was collected together with the eggs, which have since disappeared from the BMNH collection.

GREY-RUMPED SWALLOW *Pseudhirundo griseopyga*
Four clutches, all c/2, collected at Ntungo, Lac Onange, on 23 July 1907; c/3 collected at Munjue River (Lac Onange, Ogooué river), on 2 August 1907.

WHITE-THROATED BLUE SWALLOW *Hirundo nigrita*
Two clutches; c/2, without date, collected at Ngome; c/3 collected at Lake ("Elivã") Elvolo (= Lac Onange, Ogooué river), on 4 August 1907.

AFRICAN PIED WAGTAIL *Motacilla aguimp*
A c/3 collected at Ntungo, on 23 July 1907.

LONG-LEGGED PIPIT *Anthus pallidiventris*
C/2 collected at Ntungo, Lake Onange, on 23 July 1907, and c/3 collected at Lac Onange, Ogooué river, on 6 August 1907. The incubating adults (AMNH reg. nos

571651 and 571652) were collected from both nests. The eggs of this species have never been described, and are pale greyish to buffy white, rather densely speckled all over with dark brown and slate grey speckles and streaks. One clutch is markedly paler than the other, with the markings much more streaked. Only one egg from the clutch of two eggs (BMNH reg. no. 1941.7.9.120) is intact and it measures 22.6 x 16.3 mm. The eggs in the clutch of three (BMNH reg. no. 1941.7.9.120) are rather rounded and measure 20.7 x 15.8 mm, 20.9 x 15.8 mm and 21.0 x 15.7 mm. The only other breeding records known are of a nest with one young and an infertile egg on 7 January 1954 at Bolombo, Democratic Republic of Congo (formerly Zaïre) (Demey *et al.* 2000) and a clutch of three eggs found by RJD and F. Dowsett-Lemaire in Odzala N.P., Congo-Brazzaville, on 12 August 1994, but not collected.

YELLOW-THROATED GREENBUL *Chlorocichla flavicollis*
C/2 collected at Anda, Lac Azingo, on 7 December 1907.

WINDING CISTICOLA *Cisticola galactotes*
C/3 collected at Lac Onange, Ogooué river, on 15 July 1907.

CASSIN'S FLYCATCHER *Muscicapa cassini*
Two clutches, c/2 collected at Lambaréné (00°41'S, 10°12'E), on 30 August 1907, and c/2 collected at Lake Assebe (probably Lac Esseb, 00°30'S, 09°32'S) on 8 January 1908. At Makokou it breeds November-March (31 nests), especially January-February (Brosset & Erard 1986), but there is a September record from the Kouilou in Congo-Brazzaville (Dowsett-Lemaire & Dowsett 1991).

AFRICAN PARADISE FLYCATCHER *Terpsiphone viridis*
C/2 collected at Lac Onange, Ogooué river, on 29 July 1907.

BROWN SUNBIRD *Anthreptes gabonicus*
A single egg, perhaps a full clutch, collected at Lake Ogamewe (Ogemwé lac (Ogamwe, Ogewa), Ogooué river, 01°08'S, 10°00'E), on 15 June 1907, together with an adult male (AMNH reg. no. 686275) (noted on skin label) but the locality on the skin is given as Umpokosa (Ngomo) Ogooué river (01°08'S, 10°00'E).

VIOLET-TAILED SUNBIRD *Anthreptes aurantium*
C/2 collected at Anda, Lac Azingo, on 24 December 1907.

CARMELITE SUNBIRD *Chalcomitra fuliginosa*
C/2 collected at Anda, Lac Azingo, on 7 December 1907, and a single egg collected at Lac Onange, Ogooué River, on 16 July 1907.

REICHENBACH'S SUNBIRD *Anabathmis reichenbachii*
A single egg (possibly a full clutch), and c/2, both collected at Abanga River, Ogooué river (possibly Ebel-Abanga, 0° 25' S, 10° 36' E) on 4 October 1907.

ORANGE WEAVER *Ploceus aurantius*
Four clutches, all c/2, collected at Lac Azingo on 13 December 1907. Breeding in Gabon is mainly in the short dry season, December-March (Brosset & Erard 1986).

VIEILLOT'S BLACK WEAVER *Ploceus nigerrimus*
Two clutches, c/2 and c/4, collected at Lambaréné on 31 August 1907. At least one adult female (AMNH # 123127) was collected together with the eggs.

VILLAGE WEAVER *Ploceus cucullatus*
Two clutches, c/2 and c/3, collected at Lac Onange, Ogooué River, on 31 July 1907 and 4 August 1907.

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The distribution of guano and bird bones on Ascension Island, South Atlantic Ocean

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Ascension (Fig. 1) is a recent volcanic island some 10 km in diameter, lying at 07°57'S, 14°22'W in the central tropical Atlantic, 650 km south of the Equator. When discovered in 1501 it had a poor flora and terrestrial fauna but many breeding seabirds (Stonehouse 1960, Ashmole & Ashmole 2000). Goats were introduced at an early date and doubtless started to destroy the native flora. The destruction of the fauna may have been begun by Black Rats *Rattus rattus*, probably introduced when William Dampier's ship the Roebuck was wrecked in 1701 (Osbeck 1771). If so, it was accelerated by the introduction of Cats *Felis catus* to control them after the island was settled in 1815 (Packer 1968, Ashmole *et al.* 1994).

It has been suggested to us that human predation may also have played a substantial part in causing the disappearance of the larger seabirds from the main island. We are well aware of the role of local people in decimating and exterminating seabird populations in many parts of the world by collecting eggs and birds for food (Feare 1984, Steadman 1995, Nelson 2002) but are not convinced that direct human predation was of great importance on Ascension. Prior to settlement of the island visits by ships were typically short and focused on the collection of turtles (Ashmole & Ashmole 2000: 198). After the Royal Marine garrison was established in 1815 the systematic collection of Sooty Terns *Sterna fuscata* eggs became routine, but we have not found comments on the eating of adult birds. We do not doubt that some birds were taken by marines and their families, but we believe that the exponential increase in the feral cat population established at the same time as the garrison will have had a more profound effect.

Whatever the precise factors involved, by the time of the BOU Centenary Expedition in 1957-59 (Moreau 1962-63) the seabirds were mainly confined to outlying stacks and cliffs, together with a vast colony of Sooty Terns in the south of the main island. Ashmole (1963a), however, found guano and bird bones were still widespread, including two bones of an extinct flightless rail seen by Peter Mundy in

1656 (Temple & Anstey 1936). In 1970-71 Olson (1973, 1977) found more bones, including some of the rail, which he named *Atlantisia elpenor*, and a small night heron *Nycticorax* sp. During recent expeditions (Bourne & Simmons 1998, Simmons & Prytherch 1998) Simmons collected more bones in 1962-64, 1993 and 1996, John Hughes some in 1994, the Ashmoles a number including some of the night heron in 1990 and 1995, and John Walmsley some in 1996. The guano has been surveyed by Blair (1989), Robin Prytherch (pers. comm.) and the Ashmoles. We are now summarising these observations.

The distribution of guano and bones

Guano

There are extensive pale deposits all over the low ground, plotted by Blair (1989: Map 3, pers. comm.) from aerial photographs and ground surveys in 1987 and by Robin Prytherch (pers. comm.) and the Ashmoles (Fig. 2). Because it was not clear which were old guano and which pale minerals of volcanic origin, the Ashmoles collected specimens in 1990. X-ray florescence spectrometry of 40 samples (by Dr Godfrey Fitton, University of Edinburgh) showed that 28 contained much phosphate, presumably from guano, but that others had little. The guano is usually found among

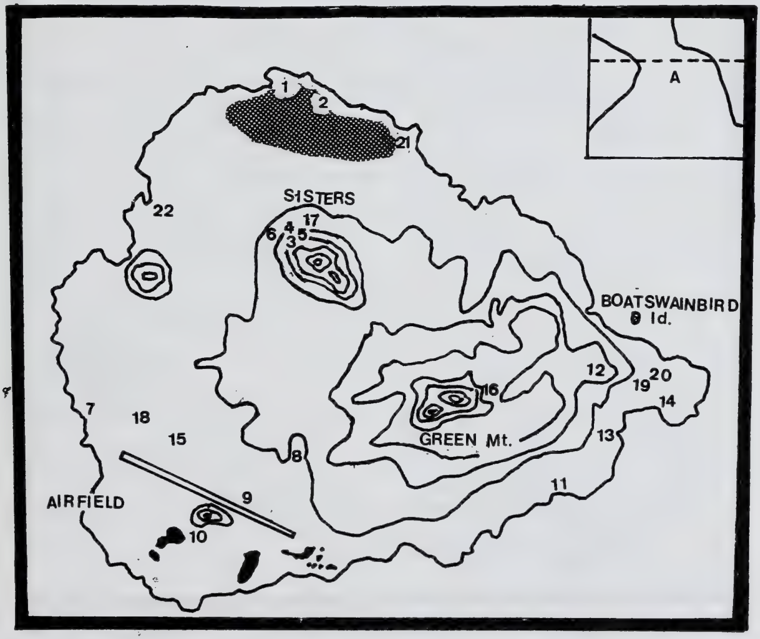

Figure 1. The Island of Ascension, showing 500m contours, past guano exploitation in the north (hatched), Sooty Tern *Sterna fuscata* colonies in 1990 (Nash *et al.* 1991) in the south (black), and the origin of the bird remains listed in Table 1 and the appendix.

broken rock. It was thickest on Boatswainbird Islet, where 1,116 tons were collected in 1851 and more in 1925-27. Powdery deposits several cm deep also occur beneath the rocks along the north coast between English Bay and Porpoise Point and these were exploited in 1925-27 (Hutchinson 1950, Packer 1968, Fig 1).

Bones and other remains

Sites where remains have been found are shown in Fig. 1 and summarised under species in Table 1, and descriptions of the sites with new records are given in the Appendix. While widespread on the low ground, most remains have been found around the eastern ridge and the NW and SW slopes of the main island. The presence of feathers, eggshell, and rhamphothecae on some skulls found in the NW north of the Sisters, confirm that although the only seabirds now breeding inland are the Sooty Terns in the south and a few White Terns *Gygis alba* in cliffs and trees on Green Mountain, up to eight seabird species occupied at least 22 sites inland in the past.

Old remains found in the open are usually scattered among the guano. Those found in the caves usually included more bones of the extremities. This could result from predators or scavengers consuming the body, or possibly the birds died with

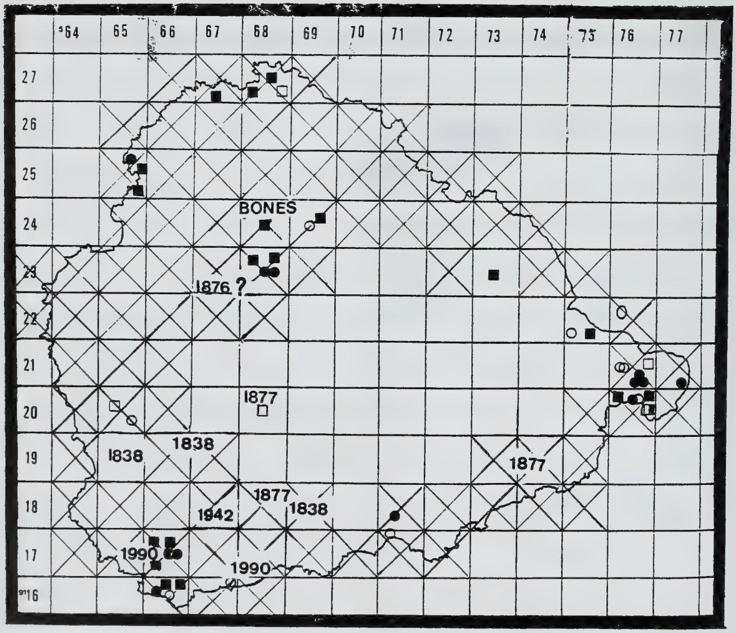

Figure 2. The Island of Ascension, showing the Universal Transverse Mercator Zone 28 (UTM) km Grid, grid squares with pale deposits marked with crosses, the result of sampling for phosphate (circles located precisely, squares within the grid square, dark positive, black and white uncertain, white negative), and dates of past Wideawake Fairs.

TABLE 1
All records of bird remains from Ascension. Numbers are minimum number of individuals;
x: indeterminable or unrecorded number; X: many.

Site	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**All sites**
Audubon's Shearwater *Puffinus lherminieri*							1											2-3					**3-4**
Madeiran Sorm-petrel *Oceanodroma castro*	1	1		1						1													**4**
Red-billed Tropicbird *Phaethon aethereus*	1					1			1	1	2						1						**7**
Ascension Frigatebird *Fregata aquila*	1	1			x	x				1	1		x	x									**>>8**
Masked Booby *Sula dactylatra*	x		x	x	x	x			x										1				**>>7**
Brown Booby *Sula leucogaster*			1		x					1	1										1	x	**>>6**
Red-footed Booby *Sula sula*		1	x	x		x		x		1		3									x		**>>10**
Ascension Night Heron *Nycticorax* sp.				1														5					**6**
Allen's/Lesser Gallinule *Porphyrula alleni*				1?																			**1?**
Ascension Rail *Atlantisia elpenor*			X	X						1							1	3-5					**c.58**
Sooty Tern *Sterna fuscata*			x	X		x			x	x					X			x					**Many**
Brown Noddy *Anous stolidus*																						x	**>1**
White Tern *Gygis alba*	x		x	x						x										2			**>6**
Number of species	5	3	6	8	3	5	1	1	3	8	3	1	1	1	1	0	2	4	1	1	2	2	

wings spread and decay was more complete in the body. In addition to many bones of the extinct native rail and some of the night heron, which presumably scavenged around the seabird colonies in the way that the Common Mynas *Acridotheres tristis* do now (Hughes 2002), they include a bone probably of a Lesser (Allen's) Gallinule *Porphyrula alleni*, presumably a vagrant (Olson 1977). However, remains of the coastal-nesting Black Noddies *Anous minutus* and White-tailed Tropicbird *Phaethon lepturus* have still not been identified, so all the known current residents have not yet been found among the remains and other former inhabitants may still remain undetected.

It appears from the distribution of their bones and eggshells that the Sooty Terns once bred with the other seabirds below Sisters Peak in the north. In 1877 there were also large colonies on Boatswainbird Islet in the north-east, where a few still remained in the 1950s, and in the centre of the main island (Gill 1878). They are now restricted to the south (Hughes 1999). The most likely explanation is that since they breed intermittently (Ashmole 1963b) and are sensitive to disturbance when they return to lay, they were driven away by cats from the colonies of the larger seabirds to less disturbed sites at the opposite end of the main island. The larger seabirds may have occupied the colonies continuously, as some still do on Boatswainbird Islet, and thus attracted predators throughout the year (Stonehouse 1962, Ashmole *et al.* 1994).

Discussion

The main question arising from the widespread distribution of guano and remains is whether the seabird population of Ascension was really once as large as these deposits, and some early accounts (Bourne & Simmons 2001) suggest. Alternatively, could their wide distribution be due to accumulation over a long period in a dry climate of remains left by smaller colonies that moved around, perhaps to avoid parasites? The main unexpected finding is the number of normally tree-nesting Red-footed Booby *Sula sula* remains found on a supposedly once treeless island. Dampier (1729), however, reported that near his camp-site on the SE slopes in 1701 there were "3 or 4 shrubby trees (possibly extinct *Oldenlandia adscensionis*: Ashmole & Ashmole 2000) upon one of which was cut an anchor and cable, and the year 1642", and that Men of War Birds (frigatebirds) and boobies afforded good food there, suggesting that they bred in the vicinity. Guano-stains suggest they bred on the lava-flows. There are few specimens of the original Red-footed Booby population remaining, but they should be examined to see if it appears distinct.

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Appendix. Sites shown on Fig. 1 where bird remains have previously been discovered, with references, UTM grid positions (grid shown on Fig. 2), and new records. Some caves are described and figured with additional coastal ones by James (1985), who reported that there are more bones in some of the Command Hill group, and speculated there may be more undiscovered lava tunnels in the area between Spoon Crater and Booby Hill. Allaby & Allaby (1991) stated the subterranean holes previously called fumaroles should now be referred to as spatter cones.

1. UTM *c.* 68-27-. Phosphate deposits near English Bay (Ashmole 1963).

2. UTM *c.* 69-27-. Lava field east of the last (Ashmole 1963). 1993: *Sula sula*.

3-4. UTM 694244. Packer's "Fumaroles". These include a complex of intercommunicating spatter cones with large and small entrances about 26 m deep and 61 m long north of Sisters Peak (Stonehouse 1960, Ashmole 1963a, Packer 1968, Olson 1973, 1977). 1993: *Gygis alba*, feather *Sula leucogaster*.

5. Lava fields around the last two (Olson 1977). 1963: numerous booby remains including 4 skulls *Sula dactylatra*, 2 skulls *S. leucogaster*, 3 skulls *S. sula* (some still with rhamphothecae), *Fregata aquila*; there are also skulls of *S. dactylatra* and *S. leucogaster* collected here by Simmons in the Zoological Museum of the University of Michigan.

6. UTM *c.* 68-24-. Phosphate deposits NW of Sisters Peak (Ashmole 1963a). 1962-63: bones and possible feathers and eggshell *Sterna fuscata* and a tarsometatarsus of *Fregata aquila* below a small boulder on an ash slope near the top of one of Daly's Crags. 1993: *F. aquila*, *Sula sula* and 2 *Rattus* sp. 1996: bones of *F. aquila* and one humerus *Phaethon aethereus* at Daly's Crags.

7. UTM 645206. Clarke's Beach Cave (lava tunnel) runs up the hill overlooking the beach for 27 m (Packer 1968, Olson 1977).

8. UTM 688189. Bird Cave (collapsed lava tunnel). Depth 13 m, length 180 m (Olson 1977, James 1985).

9. UTM *c.* 678185. Line of small spatter cones running NE from Booby Hill (Daly 1925: 15, Packer 1968, Olson 1977): 1963, 1990: *Sterna fuscata* (which bred nearby until construction of the airfield runway during World War II).

10. UTM *c.* 670180. Phosphate deposits south of South Gannet Hill (Ashmole 1963a). 1990: *Phaethon aethereus*.

11. UTM *c.* 747190. Phosphate deposits near Crystal Bay (Ashmole 1963a).

12. UTM *c.* 75-21-. Slopes of White Hill (Ashmole 1963a).

13. UTM *c.* 758200. Crater Cliff (Olson 1977). 1962/63: recent *Fregata aquila*; there are fresh specimens collected here by Simmons in the Zoological Museum of the University of Michigan.

14. UTM *c.* 767207. Depression at Devil's Inkpot (Olson 1977). 1962: two recent skulls *Fregata aquila* in a cat's larder near here.

15. UTM 661201. Jepson's Cave (lava tunnel). Entrance marked by a cairn on SE side Command Hill; length 30 m, depth 3.6 m. Said to include three passages with bones widely distributed (Packer 1968, James 1985). Cobweb Cave (lava tunnel) nearby at 203663 also marked by a cairn, depth 3.3 m, length 51 m, with a tunnel north and south. Command Hill Cave (lava tunnel) at 200666 on the SW slopes of Command Hill is marked by a cairn and is 88 m long with a number of chambers and passages.

16. UTM *c.* 731213. Holes in side ravine E Cricket Valley (Olson 1977). No bones found.

17. UTM 694245. Packer's Hole and Stace Pot. Small square hole at the edge of an outcrop of rocks. Depth 21 m, length 58 m, dangerous. The cave has a central chamber and ramifications, one of which communicates with the pot, which has a separate entrance 35 m away. 1990: *Phaethon aethereus*, end tibia *Atlantisia elpenor*.

18. UTM 658205. Chapel Grotto. Length 80 m, depth 16 m. Entrance marked by a cairn; descend 2 m to a chamber, pass through a hole to the right and descend 7 m down an old ladder, then a passage passes through a series of chambers (James 1985). 1990, 1995: bones of 1-3 *Puffinus lherminieri*, 5

Nycticorax and 3-5 *Atlantisia elpenor*. (In 1994 bones of *Sterna fuscata* were found in what may have been another hole in this vicinity).

19. UTM *c*. 762213. Valley of No Wind between White Hill/Horse and Little White Hill: 23 July 1962, booby skeletons including skull *Sula dactylatra*.
20. UTM *c*. 766215. Cairn in saddle, ravine to west of Letterbox. 1990: 2 recent *Gygis alba*.
21. UTM 714265. Porpoise Point. 1990: two mandibles and other bones *Sula sula*, humerus and distal tibia *S. leucogaster*.
22. UTM 655251. Opposite Stack 1, various dates 1962-63, 1990: active cat larders with remains *of Sula leucogaster*. 1996: metacarpals and feathers of *Anous stolidus*, which also still breeds on these stacks, near Stack 5.

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Sylvia is a babbler: taxonomic implications for the families Sylviidae and Timaliidae

by Alice Cibois

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Molecular analyses have played an important role in the progress of the systematics of birds in general, and of passerines in particular. Sibley & Ahlquist's (1990) milestone book synthesized a decade of work on avian phylogeny based on molecular characters. Several ornithologists have subsequently followed the classification proposed by Sibley & Monroe (1990), prematurely according to others (Mayr & Bock 1994). Numerous molecular studies have recently been conducted on avian taxa, some agreeing with Sibley's results, and disagreeing in others (e.g. Barker *et al.* 2002). In this context, particular attention has been placed on the Old World warbler group (Sylviidae), and especially on the genus *Sylvia*. Large amount of evidence suggests that this taxon is more closely related to the babblers (Timaliidae) than to the other warblers. After reviewing the molecular studies involved, this article weighs the evidence and discusses the ramifications for nomenclature.

The evidence

Sibley & Alhquist (1990) suggested, on the basis of DNA hybridization results, that *Sylvia* is more closely related to babblers than to the other warblers. In the global tree extracted from the DNA hybridization distance matrices (Fig. 381 p. 866), four species of *Sylvia* (Garden Warbler *S. borin*, Blackcap *S. atricapilla*, Lesser Whitethroat *S. curruca* and Orphean Warbler *S. hortensis*) cluster together and are embedded within the babblers. The Wrentit *Chamaea fasciata* is the babbler closest to the *Sylvia* group. Sibley's analysis also included the Southern Tit Warbler *subcaeruleum*, formerly in *Parisoma*, and the results suggest that this species is in fact a *Sylvia* (Fig. 286 p.796). Consequently *Parisoma* was merged into *Sylvia* in

Monroe & Sibley's (1993) checklist. Blondel *et al.* (1996) also studied the genus *Sylvia* using DNA hybridization, and similarly concluded that species previously placed in *Parisoma* form a monophyletic group with the *Sylvia* species. Sheldon & Gill (1996) attempted to replicate a portion of Sibley & Ahlquist's (1990) phylogenetic tree for oscine passerines, using the same methodology and sampling fewer taxa. Their results differed for some parts of the topology, but supported a close relationship between *Sylvia* and the babbler genus *Stachyris* (Figures 5 and 7, pp. 482 and 484).

The phylogenetic affinities between *Sylvia* and babblers were further demonstrated by mitochondrial and nuclear DNA sequencing. Fjeldså *et al.* (1999), reviewing molecular evidence for the relationships of Malagasy birds, included new mitochondrial sequence data for a subgroup of oscine birds, initially focussing on *Phyllastrephus* (Pycnonotidae), but including also representatives of warblers and babblers. The topology presented was unresolved at the familial level (Fig. 1, p. 3091), but suggested a close relationship between *Sylvia atricapilla* and two African babblers of the genus *Pseudoalcippe* (the Abyssinian Hill Babbler *P. atriceps* and the Ruwenzori Hill Babbler *P. abyssinica*). Cibois (2000, 2003) conducted a comprehensive reconstruction of the phylogeny of the babbler family using sequences of three different mitochondrial markers. The results agree with Fjeldså *et al.* (1999) in finding a sister relationship between *Sylvia* and *Pseudoalcippe*, these two taxa being members of a monophyletic group of Asian babblers that also includes the American babbler *Chamaea fasciata*. Finally, Barker *et al.* (2002) performed a large phylogenetic analyses of the oscine passerines based on nuclear sequence data, and found that *Sylvia*, *Garrulax* and *Zosterops* belong in the same clade.

Taxonomic implications

Thus evidence has accumulated from different molecular approaches indicating that *Sylvia* (including *Parisoma*) is in fact a babbler. Most of the taxonomic modifications proposed consequently follow Sibley's classification, in which the babbler group is included within the Sylviidae, and divided among two subfamilies, Garrulacinae and Sylviinae, and among three tribes inside the Sylviinae: Timaliini and Chamaeini for the babblers, Sylviini for *Sylvia* (Inskipp *et al.* 1996, Robson 2000). This classification was derived from the results of DNA hybridization but, except for the position of *Sylvia*, there is no confirmation from other studies for the hypotheses of relationship concerning the other babblers. For example, the phylogeny reconstructed by Cibois (2000, 2003) does not feature a subdivision of Garrulacinae *versus* other babblers. Shirihai *et al.* (2001) recently suggested including the babblers and *Sylvia* in a subfamily within the Sylviidae. They proposed naming this subfamily Timaliinae, but without commenting on nomenclatural procedure.

The proposition suggested here is to restrict taxonomic modification only to the case of *Sylvia*, whose phylogenetic relationships are now well supported. This modification would include the placement of *Sylvia sensu lato* (i.e. *Sylvia* and *Parisoma* species) among babblers. The question then becomes, what is the name of this group? To address this matter, I refer to the International Code of Zoological

Nomenclature (International Commission on Zoological Nomenclature 1999) which contains the two following relevant statements:

1. *Principle of priority*. Article 23 states, in summary, that the valid name for a taxon is the oldest available applied to it. Therefore Sylviidae Leach, 1820 (*Sylvia* Scopoli, 1769) has priority with respect to Timaliidae Vigors and Horsfield, 1827 (*Timalia* Horsfield, 1821). In this case, Timaliidae would become a synonym of Sylviidae as a name for the babblers and *Sylvia* assemblage. However, this solution would be very confusing for all the users of the classification, because the name Timaliidae (or Timaliinae) has been consistently used since the beginning of the last century for the taxon including *Timalia* and the other babblers (Hartert 1907, Delacour 1946, Mayr & Amadon 1951, Vaurie 1959, Deignan 1964, Storer 1971, Morony *et al.* 1975, Wolters 1975-1982, Voous 1977, Howard & Moore 1994).
2. *Precedence of names in use at family level*. Stability of family names is emphasized in two articles of the Code. Article 40.1 states that the validity of family-group names is not affected by the fact that its type genus is considered to be a junior synonym of the name of another nominal genus. Moreover, Article 35.5 states the precedence of names already in use at higher rank, increasing the stability at this level of taxonomy. Thus, the type genus *Sylvia* will always remain the name-bearer of the family-group name Sylviidae, and modification of the status of the type genus should not be followed by modification of the family-group name to which the type genus is related (see Bock (1994) for details on the type genus concept in zoological nomenclature).

The family-name issue between Timaliidae and Sylviidae has been submitted for consideration to the Standing Committee on Ornithological Nomenclature (SCON), which met in August 2002 during the 23rd International Ornithological Congress. The SCON withdrew from taking any action at that stage because, in its view, a sufficient case had not been yet published (Richard Schodde, pers. comm.). Nevertheless, following the SCON's suggestion, the conditional suppression of the Sylviidae with respect to Timaliidae is proposed here. If in the future babblers and warblers are placed by some authors in the same family, then this group should be called Sylviidae as a strict application of the priority rule (cf. statement 1). However, if as seems likely, the Timaliidae and several groups of warblers are recognized at the same family level, then the family-group name Sylviidae Leach, 1820 should be suppressed and the name Timaliidae Vigors and Horsfield, 1827 kept for the babblers and *Sylvia*. Other names should be used for the different warbler groups, chosen for instance among the 26 synonyms listed for Sylviinae by Bock (1994). Maintaining the name Timaliidae for the group that comprises *Sylvia, Timalia* and the other babblers is consistent with the phylogenetic results provided by numerous studies, and this proposition follows the principle of stability of scientific names advocated in the code of nomenclature (cf. statement 2). Several molecular studies already suggested that the Old World warbler group, regardless of *Sylvia*, is not monophyletic (Sibley & Ahlquist 1990, Sheldon & Gill 1996, Sturmbauer *et al.* 1998, Cibois *et al.* 1999). Following these results, the emergence of the Cisticolidae Sundevall, 1872 and Regulidae Vigors, 1825 has been acknowledged (Inskipp *et al.* 1996), and additional studies will determine which other warbler groups also deserve to be recognized as families.

In conclusion, it is clear that further studies will be necessary for addressing the complex case of the Old World warbler phylogeny. However, given the flux of family level taxonomy generated by molecular studies, similar cases are likely to arise in the future, and formal propositions for modifications at the family-level should be developed to avoid conflicting use in the literature.

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Notes on the avifauna of the Cordillera de Mérida, Venezuela

by A.-A. Weller & C. Rengifo G.

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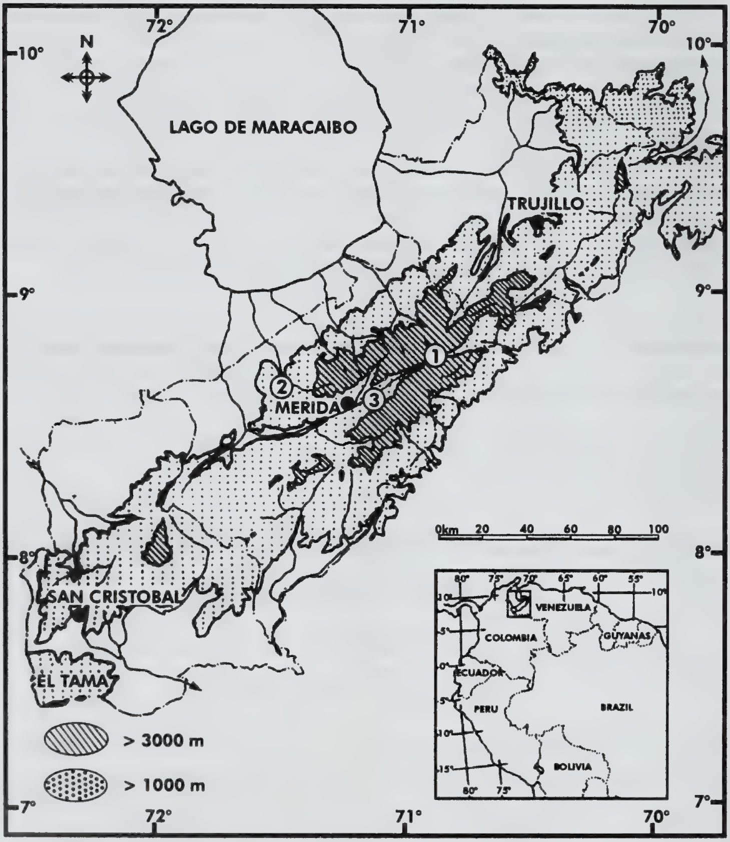
The Andes of Venezuela are oreographically a north-eastern extension of the Cordillera Oriental of Colombia, separated from the latter by the Táchira depression. They extend from Táchira in the south-west to Lara in the north-east but the main range is located within the territory of Mérida (Cordillera de Mérida; Fig. 1). In central Mérida, the mountains rise up to an elevation of 5,000 m a.s.l. (Pico Bólivar, 5,007 m), comprising a large variety of altitudinal landscapes and ranging from the submontane foothills to the high Andes. The upper elevational habitats between the treeline and the alpine zone (> 3,000 m) are mainly formed by the *páramos* with their typical *Espeletia*-dominated (Asteraceae) steppe (Vuilleumier & Ewert 1978), containing scattered patches of woodland and shrub (e.g., *Polylepis*, Rosaceae; Fig. 2) with a particular associated avifauna. Owing to the importance of the Andes of Mérida as a centre of diversity and endemism, large parts of this mountain range are protected by the Sierra Nevada National Park, classified as an Endemic Bird Area (EBA; Stattersfield *et al.* 1998).

Since the publication of the fundamental works of Meyer de Schauensee & Phelps (1978) on the birds of Venezuela, surprisingly few studies have added information on the avifauna of the Mérida region, although it has certainly become one of the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7°
72°
71°
70°
80° 75° 70° 65° 60° 55°
10°
5°
0°
10°
15°
VENEZUELA
COLOMBIA
GUYANAS
ECUADOR
PERU
BRAZIL
BOLIVIA
80° 75°

Fig. 1. Andes of Mérida and adjoining parts. Numbers encircled indicate study sites (for details, see text): 1 – Mucubají; 2 – La Azulita; 3 – La Mucuy.

most easily accessible and touristically frequented and, last but not least, safest places in this country. Vuilleumier & Ewert (1978) published the most comprehensive review on Venezuelan *páramo* bird species. Subsequently, general information on the high-Andean avifauna was presented in Fjeldsa & Krabbe (1990), whereas more recent contributions dealing with Venezuelan birds focused only partly on Andean taxa (e.g., Boesman 1998, Kirwan & Sharpe 1999, Hilty 1999, Sharpe *et al.* 2001, Hilty 2003) or on the inventory of particular Andean localities (Stiles 1984). The goal of this paper is to reflect on distributional, biogeographical and ethological aspects of a number of birds found in the Andes of Mérida, covering both endemic as well as more common and widespread taxa. Additionally, we present noteworthy range or altitudinal extensions for several species, together with remarks on Nearctic migrants, including various first species records at the state level.

Study sites and methods

Field observations were made at various localities, visited by either one or both authors, and covered different habitats from the tropical to the upper temperate zone at altitudes between 1,000 and 4,200 m. Species were recorded visually or bioacoustically, and in several cases additional photographic documentation was obtained. At particular sites, mist-netting was undertaken by CRG (with all birds released after examination). Coordinates and altitudes (all given as a.s.l.) of study sites provided below are from Paynter (1993) and the Alexandria Digital Library Gazetteer (http://fat-albert.alexandria.ucsb.edu:8827/gazetteer/):

1. *Paso de Mucubají* (*c.* 3,500 m, 08°48’N, 70°48’W). This trans-Andean pass in Mérida, *c.* 13 km NE of Mucuchiés, is flanked by the same-named mountain lake and *páramo*. Generally, the area represents one of the most important inner-Andean passage routes for many migrants such as raptors and passerines (e.g. Kirwan & Sharpe 1999). The margin zones of the surrounding Páramo de Mucubají, though still comparatively extensive, are frequently visited by tourists who use it for recreation, but also suffer from the increasing spread of introduced pines *Pinus caribea*, which are progressively overgrowing the indigeneous vegetation.

2. *La Azulita* (1,135 m, 08°43’N, 71°27’W). A mountain village with an average altitude of 1,500 m, situated on the western Andean slope above the Maracaibo basin, in the transition zone of tropical evergreen to lower subtropical cloud forest. Considering the climatic conditions, the annual mean temperatures oscillate between 10-18°C, with day-night amplitudes of 6-8°C, while the annual rainfall varies from 1,000-2,600 mm. As the predominating ecological unit of this region (Meyer de Schauensee & Phelps 1978), the forest comprises several vegetation strata. The richness of tree species varies between 40 and 60 species per ha, with a canopy height of 25-35 m. Among the most characteristic elements of the arboreal strata are the genera *Mauria*, *Cordia*, *Brunellia*, *Weinmania*, *Clusia* and

Podocarpus. The moist conditions support a great variety of epiphytes (Bromeliaceae, Orchidaceae, pteridophytes). The typical feature of the shrubby and herbaceous strata is the presence of tree ferns (Cyatheaceae). Owing to the favourable local conditions, including the broad mix of natural and man-made habitats (e.g., riverine forests, coffee plantations, orchards), the vicinity of La Azulita is a hot-spot for migration of both Neotropical and Nearctic taxa in this Andean region.

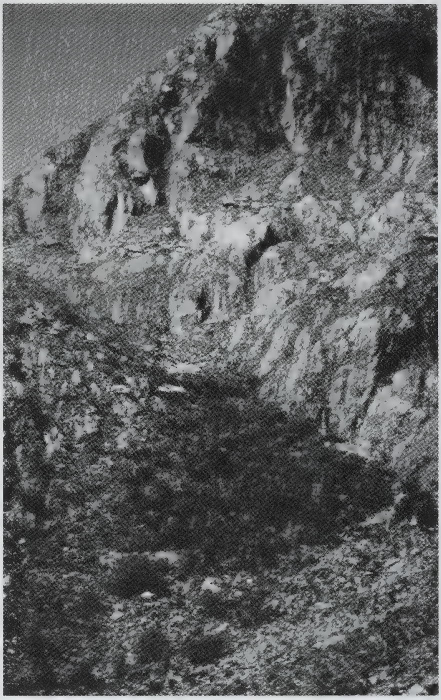

Fig. 2. Patch of *Polylepis* (Rosaceae) shrub surrounded by *Espeletia* (Asteraceae) steppe in the páramo south-east of Mérida.

3. *Mérida* (08°36'N, 71°08'W). With an average altitude of 1,641 m, the capital of the same-named state is located on a plateau in the upper Río Chama valley. Due to the topographic affinities the climate is subtropical. Mérida is surrounded by the highest Andean peaks in Venezuela, i.e., to the east by the ridges of Pico Bolívar (08°33'N, 71°03'W). This mountain range, particularly the surrounding *páramo* zone, has been made accessible by the world's longest and highest cable car, the so-called Teleférico, that stops at four different stations: La Montaña (2,500 m), La Aguada (3,450 m), Loma Redonda (4,045 m) and Pico Espejo (4,765 m). During two field excursions (27, 31 August 2001; AAW), observations were made in the cloud forest, *subpáramo* and *páramo* zone between 2,500 and 4,200 m.

4. *La Mucuy* (08°36'N, 71°03'W). Located in the Sierra Nevada National Park, 15 km east of Mérida. Elevation ranges between 2,200 and 2,700 m, and mean annual temperatures vary between 10 and 18°C (Ataroff & Rada 2000). Rainfall is variable from 1,700-3,500 mm annually, with peaks between April and May and between October and November (Ataroff & Rada 2000). Categorized as a cloud forest ecosystem, the vegetational structure of the area is complex, with an irregular canopy at 20-30 m supporting a high diversity of epiphytes. Since 1999, the "La Mucuy" Bird Observatory has been operating at this site. The main objectives of this field station are: (1) monitoring of the populations of resident

and migratory birds of the Andean cloud forests (e.g., by a ringing programme), (2) promoting studies of the regional avifauna and (3) educating local residents, visitors and park officers on the international importance of this National Park and the Venezuelan Andes both for resident and migratory birds.

Further data on distribution and morphology were obtained from specimens deposited in the bird collection of the Universidad de los Andes, Mérida (CVULA).

Species accounts

RUSTY-FACED PARROT *Hapalopsittaca amazonina theresae*
This taxon is endemic to Venezuela and restricted to the Andes of Mérida (Stattersfield *et al.* 1998). Due to the rather small and declining overall range, the species is considered as endangered (BirdLife International 2000). Twelve individuals were seen on 6 April 2002 in elfin forest along the Humboldt trail (2,700 m), Sierra Nevada National Park, one of the few observation sites for this parrot (Sharpe, pers. comm.; *cf.* Hilty 2003). The location and continuous observation of this small group allowed us to gather some new and relevant information concerning its feeding ecology; in particular, *Ocotea* sp. (Lauraceae), *Nectandra* sp. (Lauraceae), *Cavendishia* sp. (Ericaceae), *Clusia multiflora* (Clusiaceae), and *Miconia meridensis* (Melastomataceae) were identified as important food sources. When foraging, the Rusty-faced Parrot is usually quiet and thus difficult to detect in the foliage.

RED-LORED PARROT *Amazona autumnalis salvini*
Found in Central and South America, particularly from eastern Mexico to western Ecuador (Forshaw 1977, Hilty 2003), with the subspecies *A. a. salvini* restricted to south-eastern Nicaragua, Caribbean slopes of Costa Rica, Panama, western Colombia, and extreme north-western Venezuela (Sierra de Perija). 15 individuals were seen on 7 February 2003 and another four on 15 March 2003 at Bolivia (600 m), 5 km NW of La Azulita. The first group was vocalizing and foraging on *Erythrina poeppigiana* (Fabaceae) during the observation, while the second was found quietly perched on a Lauraceae tree. These sightings represent the first records of this species in the Cordillera de Mérida as well as a new altitudinal record for Venezuela, extending the previously known distribution in Venezuela eastward for about 150 km. As it is supported by recent sightings of the Military Macaw (*Ara militaris*), Blue-fronted Parrotlet (*Touit dilectissima*) and Bronze-winged Parrot (*Pionus chalcopterus*) (Hilty 2003; CRG, pers. obs.), all three regularly ranging nearest in Sierra de Perija, at the same location, the occurrence of *A. autumnalis* on the western Andean slope indicates that both mountain ranges are linked by a faunal exchange corridor across the south-western Maracaibo Basin.

BAND-WINGED NIGHTJAR *Caprimulgus longirostris ruficervix*

Two individuals (at least one male, based on white wing band), with one resting on the main mountain trail, were chased in the *páramo* between La Aguada and Loma Redonda (*c.* 3,800 m; 31 August 2001). This record is close to the uppermost limit (4,200 m; Fjeldså & Krabbe 1990) of this ecologically widely distributed species (Cleere 1999, Holyoak 2001) and represents an altitudinal extension both for *C. l. ruficervix* and for Venezuela (formerly known from up to 3,200 m, Hilty 2003), respectively. Another bird was found roosting on a horizontal branch, *c.* 15 m high, during the morning of 30 August, at the south-eastern corner of Parque Las Heroinas, within the city of Mérida. Its presence attracted various songbirds including Tropical Mockingbird *Mimus gilvus*, Black Phoebe *Sayornis nigricans* and Dark-backed Goldfinch *Carduelis psaltria*. According to Cleere & Nurney (1998) and Holyoak (2001), the species is frequently found in urban areas and within cities. The rufous-coloured subspecies *ruficervix* is sometimes considered to be a distinct species (Davis 1979; *cf.* Cleere 1999, Holyoak 2001).

GREEN-FRONTED LANCEBILL *Doryfera ludovicae ludovicae*

Within South America, this trochilid occurs chiefly along the Andean slopes from Colombia to northern Bolivia, inhabiting tropical and subtropical humid forests mainly from 1,600-2,300 m (Schuchmann 1999). At the north-eastern range limits, it occurs very locally in the Venezuelan Andes (i.e., Hacienda Las Delicias, 1,080 m, eastern Táchira, CVULA # 202, and around Mérida; Meyer de Schauensee & Phelps 1978, Sánchez-Osés 1995, Hilty 2003). During the year-round ringing programme at La Mucuy, two individuals were mist-netted in cloud forest at 2,600 m (2 December 2001), extending the known elevational range in Venezuela. Some individuals were seen foraging on *Cavendishia bracteata* and *C. pubescens* (Ericaceae) flowers.

GLOWING PUFFLEG *Eriocnemis vestitus vestitus*

One female and one immature were observed, and the latter photographed, on 31 August in a patch of *Polylepis* shrub (Fig. 2), surrounded by open *páramo*, east of Loma Redonda around 4,200 m. This record extends remarkably, by 600 m, the known upper altitudinal limit of this trochilid (Meyer de Schauensee & Phelps 1978, Fjeldså & Krabbe 1990, Schuchmann 1999, Schuchmann *et al.* 2001; for Venezuela: 3,600 m, Hilty 2003). Contact calls of the immature, sounding like *seeet-seeet*, attracted a female, obviously a parent. The incomplete plumage and bill development, together with its limited flight ability, suggested that the young bird had very recently left the nest.

BEARDED HELMETCREST *Oxypogon guerinii lindeni*

This endemic subspecies is a locally common inhabitant of páramo and *Polylepis* shrub (Vuilleumier & Ewert 1978). Among other plants regularly observed as food sources (i.e., *Espeletia schultzii*, Asteraceae), observations in the surroundings of

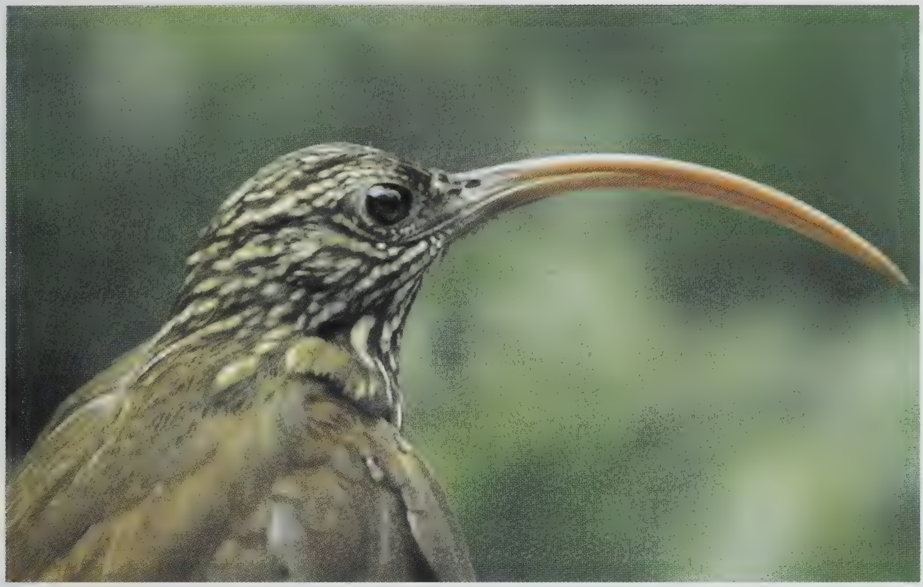

Fig. 3: A dendrocolaptid new to the state of Mérida: Red-billed Scythebill *Campylorhamphus trochilirostris venezuelensis*.

Loma Redonda and Laguna de Mucubají revealed that this hummingbird species commonly visits the ornithophilous plant *Castilleja fissifolia* (Scrophulariaceae).

RED-BILLED SCYTHEBILL *Campylorhamphus trochilirostris venezuelensis*
According to Hilty (2003), the species has been recorded throughout the northern part of Venezuela (north of the Orinoco) from Zulia to Sucre, including Península de Paria, northern Monagas and south-western Anzoátegui. One individual was mist-netted on 15 June 2003 (Fig. 3), within a small inhabited area of Limones (500 m), 10 km north-west of La Azulita, representing the first record of this species for Mérida.

ANDEAN COCK-OF-THE-ROCK *Rupicola peruviana aequatorialis*
Regularly found in steep, humid, and wet forested ravines with rocky outcrops necessary for breeding. So far, in Venezuela the taxon has been recorded with certainty only from southern Táchira and one site in Barinas (San Isidro valley) at elevations between 1,000-1,550 m (Meyer de Schauensee & Phelps 1978, Hilty 2003). Here we can add three new leks that were recently discovered in the Andean foothills of Barinas: 1. surroundings of San Juan Bautista (800 m), with four males observed on

5 March 2002; 2. El Quino (1,500 m), with seven males observed on 7 January 2002; 3. Santa Maria de Canagua (600 m), with eight males and three females observed on 27 January 2002, representing a new lower altitudinal limit and a slight range extension for Venezuela. Since the avifauna of the Andean foothills of Barinas is still poorly known to date, we are convinced that future searching efforts will result in locating further as yet undetected leks in this area.

CINNAMON FLYCATCHER *Pyrrhomyias cinnamomea*
One individual was seen in orchard-like habitat within a small inhabited area (Chorotal) above La Azulita (27 August 2001). According to Hilty (2003), the species has been recorded in the Andes of Venezuela from south-western Táchira and Lara but not from the region between, comprising the territory of Mérida. For geographical and morphological reasons (e.g., cinnamon-rufous upperparts), the observed bird probably referred to the subspecies *P. c. vieillotioides*, distributed in north-western Venezuela (Meyer de Schauensee & Phelps 1978).

BLACKPOLL WARBLER *Dendroica striata*
This Nearctic migrant to north-western South America winters mostly east of the Andes (Paynter 1995, Rappole *et al.* 1995), but is poorly known from its southern range (Hunt & Eliason 1999). In Venezuela, the Blackpoll Warbler has been mainly recorded from the northern part and some offshore islands where it is regularly found in evergreen humid forest below 1,600 m (Meyer de Schauensee & Phelps 1978, Paynter 1995, Rappole *et al.* 1995), but may occur occasionally higher, ascending to 3,000 m on migration (Hilty 2003; Sharpe, pers. comm.). A small flock of 3-4 individuals in fall plumage was observed in the transition zone of elfin forest and *subpáramo* on 27 August 2001 along the main hiking trail, a short distance below La Aguada at *c.* 3350 m, constituting an upper altitudinal extension both for Venezuela and in general (Paynter 1995, Hunt & Eliason 1999). Furthermore, this is the earliest fall occurrence of Blackpolls reported for South America, considerably pre-dating the currently known first date of arrival (27 September, Hilty 2003).

BLACK-THROATED GREEN WARBLER *Dendroica virens*
Except for southern Florida, the species winters from Mexico through Central America and northern South America. In Venezuela, it has been mainly reported to frequent mangroves, forest borders and open areas from sea-level to 2,200 m (Hilty 2003). During the ringing programme (September-October) at Laguna de Mucubají (3,400 m), four males were caught on 14 October 2001, representing a new altitudinal record for the species (Meyer de Schauensee & Phelps 1978, Hilty 2003).

CERULEAN WARBLER *Dendroica cerulea*
The Cerulean Warbler is one of the commonest Neartic migrants in the *cafetales* (coffee plantations) surrounding La Azulita, indicating that this species tolerates a

certain degree of habitat disturbance and manipulation in the wintering range. During the monitoring programme in November-December 2002 at this site, 15 individuals were mist-netted and ringed. Most individuals foraged by foliage-gleaning. The high abundance of Cerulean Warblers in the coffee plantations and *selva estacional* (seasonal forest, which is the zone between submontane and cloud forest) of the Andean foothills facing the Maracaibo Basin allows us to suspect that this area could be one of the most important wintering grounds for this species in Venezuela. Since it has a small total population which is declining significantly (Rappole 1995), it is important to understand the ecology of this species in its wintering grounds as well as to implement projects in both breeding and wintering ranges, geared towards its conservation.

THREE-STRIPED WARBLER *Basileuterus tristriatus*

One individual was observed in similar habitat to the Blackpoll Warblers below La Aguada at *c.* 3,400 m (27 August 2001), extending the known altitudinal range in Venezuela above 3,000 m (2,700 m, Hilty 2003).

SLATY FINCH *Haplospiza rustica rustica*

Rare and local in humid forest, at forest borders and in shrubby clearings, from 1,200 to 2,800 m (Hilty & Brown 1986, Hilty 2003). Ranges in Central America from southern Mexico to western Panama, and in western South America mainly along the Andes of Colombia to northern Bolivia (Meyer de Schauensee & Phelps 1978, Ridgely & Greenfield 2001). Until recently, in Venezuela the taxon had been recorded only from Zulia (Sierra de Perijá), Distrito Federal (both ssp. *rustica*) and two localities in Bolívar (ssp. *arcana*; Meyer de Schauensee & Phelps 1978, Ridgely & Tudor 1989). Two individuals mist-netted on 17 September 2001 at La Mucuy constitute the first record for the Sierra Nevada National Park, filling the gap between more recently published sightings from the Táchira-Mérida border (Hilty 1999, 2003) and Trujillo (Sharpe *et al.* 2001). This indicates that this vagrant species might be more continuously distributed, at least in the western part of Venezuela.

Acknowledgements

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A nest of the Greater Bird of Paradise *Paradisaea apoda*

by Clifford B. Frith

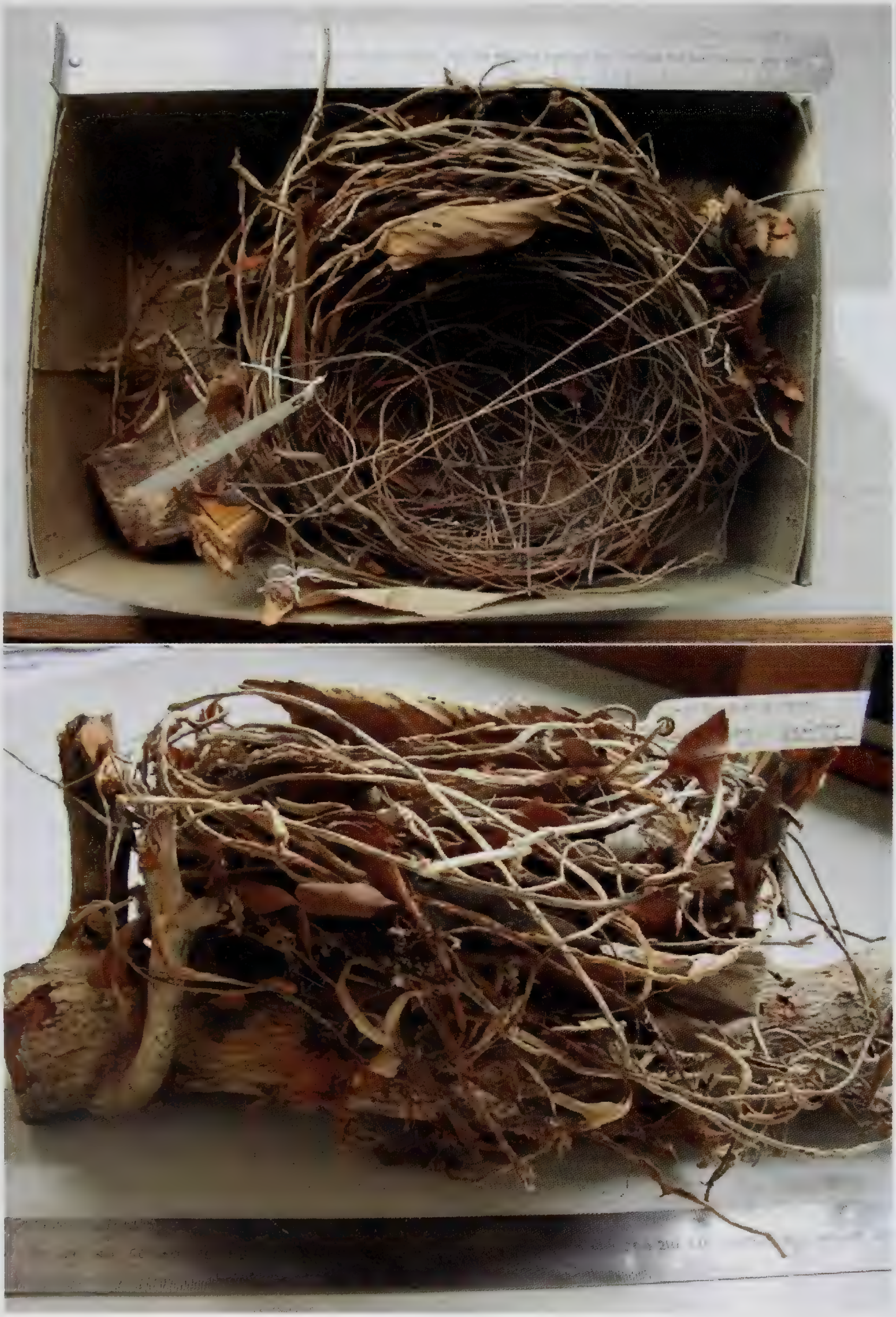
Received 6 December 2002

The Greater Bird of Paradise *Paradisaea apoda* was possibly the second species of the family Paradisaeidae to be made known to the western world (the Lesser Bird of Paradise *P. minor* probably being the first) being first formally described by Carl Linnaeus (1758). The species inhabits lowland tropical rainforests of southern New Guinea, more specifically the Aru Island and the south-east of the mainland of Indonesian West Papua (or Irian Jaya) and the extreme south-western border area of Papua New Guinea (Frith & Beehler 1998).

The first scientist to observe living Greater Birds of Paradise in the wild was Alfred Russel Wallace (1857, 1869). Thus, given the bird's early scientific discovery and distribution, it is surprising that it remains arguably the least known of the seven 'true' or 'plumed' (*Paradisaea* spp.) birds of paradise (Frith & Beehler 1998). Moreover, while at least eight Greater Bird of Paradise single egg clutches have been collected and/or described, the only nest of the species remained undescribed and depicted until now (see below). According to the specimen label, W. J. C. Frost collected this nest in the Aru Islands during October 1925 (but see Frith & Beehler [1998: 531] who only cite him as present in these islands during August of that year).

The nest in question is preserved within the collections of The Natural History Museum, Tring, UK (nest registration number N193.514, of the Rothschild Bequest). The nest specimen label records it to have been taken at 'Waikoa', Aru Islands. As Gilliard (1969) cited Schönwetter (1944: 18) as describing a Greater Bird of Paradise egg from 'Wokiau Island in the Aru Islands' it would appear likely that the egg referred to was laid in the nest described below. The location would appear most likely to be what is presently Workai, on the north coast of the central-eastern Aru island of Palau Maikoor. It could, however, refer to the island of Palau Workai (the largest island at the south-eastern tip of the Aru group). As no information is recorded as to nest site and its height above ground it is possible the nest was collected, and brought to Frost, by a local person.

The nest was built atop a tree branch of *c.* 5 cm diameter (suggesting a large and presumably tall tree), supported at each of an opposite edge of its circumference by near vertical *c.* 2 cm, diameter branches that rise vertically from the larger branch (Fig. 1). The open cup type nest is of a shallow (total depth from upper rim to lower base *c.* 105 mm) basin shape with an external diameter of 210 mm and an internal one (*i.e.* of the egg cup) of 120 mm. The nest base is of large, now dry, leaves. The outer structure consists predominantly of stems (probably of epiphytic orchids and/



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or vines) presumably supple and 'green' when incorporated but now brittle and 'woody'. These stems are most prolific and dense about the upper rim of the structure and, while they could not be accurately measured, some are certainly more than 600 mm long. In their present condition they vary from *c*. 3 mm down to 1 mm in diameter. Some of these stems have one to several leaves attached. Included among the outer nest rim materials are the dried remains of several *Pyrrosia*-like fern stems with their attached fronds. The nest lining directly above the bed of leaves (that is visible through the lining) consists of finer long and once supple vine tendrils up to, but predominantly finer than, 1.5 mm in diameter.

It is noteworthy that, like other bird of paradise nests (and contrary to nests of the bowerbird family Ptilonorhynchidae), woody sticks do not feature in this nest structure. In general terms this nest (Fig. 1) is much like those typical of the true birds of paradise (*i.e.* of the subfamily Paradisaeinae) and more particularly is perhaps most like those known for congeneric and *Ptiloris* species. Nests of the latter genus also typically have *Pyrrosia* fern fronds incorporated into them (see Frith and Beehler 1998 and references therein).

Acknowledgements

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Figure 1 (on opposite page). Great Bird of Paradise *Paradisaea apoda* nest (BMNH N193.514) from Waboa, Aru Islands, West Papua, Indonesia: in a box and viewed from directly above (top) and in profile (bottom) with a 300 mm ruler for scale. String, visible across the nest from top right to bottom left on the top image is used to hold the nest on to its supporting branch. Digital images courtesy of Dr J. H. Cooper and The Natural History Museum.

Systematics and confusion in the genus *Parmoptila*

by Martin W. Woodcock

Received 29 November 2002

An instance of perceptive field observation, coupled with confusion in the literature, has prompted this review.

The generic name was erected by Cassin (1859), to describe a small insectivorous estrildid finch from Gabon. The name refers to the scaly pattern formed by rounded scale-like feathers on the head and throat, from the Latin *Parme* - a small round shield, and the Greek *Ptilon* – a feather. He named the species *woodhousei* in honour of the American surgeon and naturalist in central Africa, S. W. Woodhouse (1821-1904). The sexes are nearly alike in plumage, which is brown above, the sides of the head and the throat light rufous, and the underparts whitish, with profuse dark spotting. In the male, the feathers on the forehead are tipped bright crimson, the female having only small rufous tips to these feathers. The species has subsequently been found to occur from south-eastern Nigeria through southern Cameroon and Gabon to the Congo and western Zaire. A paler subspecies from northern Angola was described in 1904 by Hartert.

Sharpe & Ussher (1872) described a new species from Ghana, which they placed in the genus *Pholidornis*, naming it *rubrifrons.* Unlike *Parmoptila woodhousei*, this species is sexually dimorphic, the male having the underparts deep chestnut, while the female is whitish below with heavy dark spotting. Both sexes have the upperparts dark greyish-olive, not brown, and the male has profuse white spotting on the sides of the head, the nape and sides of the neck. It also has a wide scarlet band on the forehead, which the female lacks. The feathers of the mantle and nape in both sexes are edged paler, forming a scaly pattern, which is present, though less obvious, on the underparts of the male. Its distribution extends to Liberia, Guinea and Ivory Coast, Sierra Leone, and possibly to southern Mali.

Shelley (1890) described a third species to be ultimately assigned to the genus *Parmoptila*, naming it *Pholidornis jamesoni*, in honour of the Scottish explorer and naturalist J.S. Jameson (1856-1888) whose account of the Emin Pasha relief expedition had been published two years before. The description was based on a single male bird from Yambuya, in the Belgian Congo, now the Democratic Republic of Congo, It much resembles the male of *P. rubrifrons*, except that instead of the sides of the head being concolorous with the upperparts, and spotted with white, they are rufous, uniform with the underparts. The type specimen has been the only specimen at the Natural History Museum, London, since it was collected. This species has since been found to occur as far east as Uganda and north-western Tanzania.

An early contribution to confusion in the nomenclature occurred when Sharpe (1874) erected a new genus to describe what eventually turned out to be a fledgeling of *P. woodhousei*, naming it *Lobornis alexandri* on account of the white wattles at the gape. The description was repeated by Sharpe (1885) with a coloured figure. Sharpe (1908) recognised his mistake, and *Lobornis* was synonomised with *Parmoptila.*

The three species comprised the genus for the next forty years, and were listed as such by Sclater (1930). However, Delacour (1943), treated all three forms as conspecific. With the notable exception of a later authority on the Congo avifauna (Chapin 1954) all subsequent authorities revised and confused the nomenclature in various arbitrary degrees of lumping. Thus, both Schouteden (1958) and White (1963) lumped all the forms under *woodhousei*, while Hall & Moreau (1970) maintained *woodhousei* as a good species, but ignored the name *rubrifrons* completely, treating the other two forms as *jamesoni*, despite the fact that the former was described 18 years earlier. Traylor (1968) treated all the forms under *woodhousei,* and Goodwin (1982) and Sibley & Monroe (1990) treated *rubrifrons* and *jamesoni* as conspecific. Confusion in the recent literature has not helped, since Stevenson & Fanshawe (2002) illustrated a species they called *woodhousei*, showing the male of *jamesoni* and the female of *woodhousei*! Prior to nearly all this revision, Chapin (1954), retaining

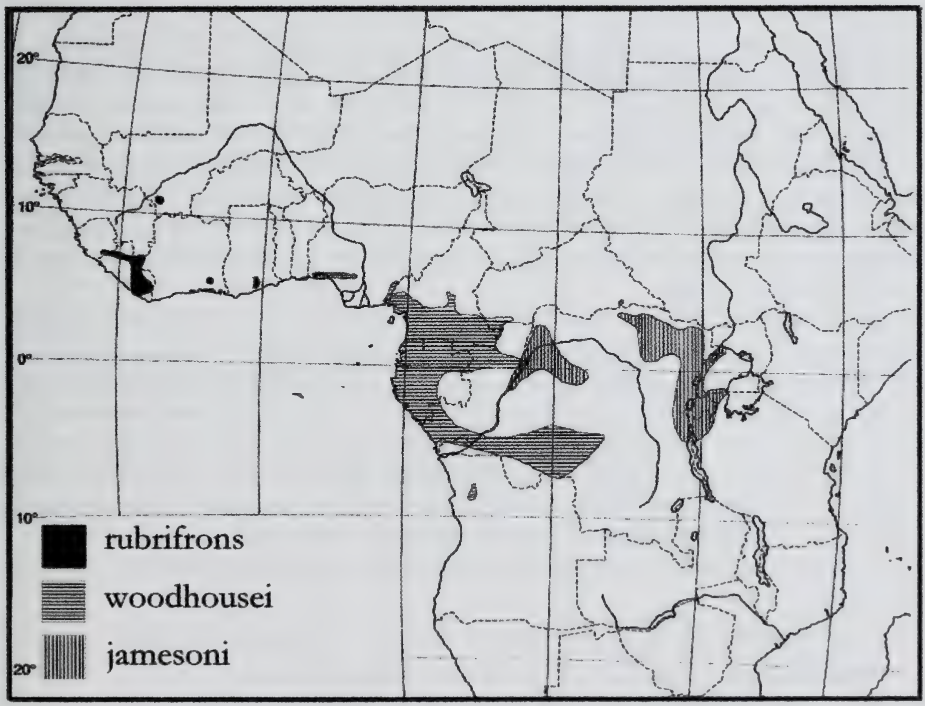

Fig 1. Distribution of the three species of Parmoptila

jamesoni as a good species, listed 11 specimens from the Belgian Congo, commenting that there may well be an area of sympatry with *woodhousei* around Lukolela. Importantly, he gave a good figure of the female of *jamesoni*, which was hitherto undescribed, and drew attention to differences in the markings on the underparts from *woodhousei.* Dickerman *et al.* (1994) commented that the ranges of the two dimorphic species are separated by that of the monotypic *woodhousei,* and recommended the recognition of three species, although erroneously attributing scaled markings on the underparts of the females to *P. rubrifrons* as well as *P. jamesoni.*

The writer has been responsible for the colour illustrations in *The birds of Africa* (1982 -), and in that capacity was told by Mr John Eyre in September 2002 that he had recently observed, in south-west Uganda, a male *jamesoni,* in company with what appeared to be a female *woodhousei,* except that instead of being spotted on the underparts, it was barred. In order to clarify the situation for the relevant plate in *The birds of Africa*, I arranged for a loan of five skins from the Musée Royal de l'Afrique Centrale, Tervuren, Belgium. A detailed examination of them in comparison with the extensive series of skins of *rubrifrons* and *woodhousei* held at the Natural History Museum, Tring, with the help of Dr David Pearson, demonstrated that the original assignment of antpeckers to three distinct species was correct.

The two sexually dimorphic species, which are separated east and west of the monomorphic *woodhousei,* differ in the following respects. Both sexes of *P. jamesoni* have the upperparts somewhat greyer than those of *P. rubrifrons*. The underparts of the male are orange-rufous rather than chestnut, this colour extending to the chin and sides of the head, where *P. rubrifrons* is dark olive with white spotting, the chin being whitish-buff. The red patch on the crown of the males is more extensive on *rubrifrons* and is a deeper, brighter red. The female of *jamesoni* is markedly different from female *rubrifrons,* having the face and throat light rufous, and the whitish-buff underparts with dark scaly barring as opposed to heavy black spotting. The barred underparts, previously noticed only by Chapin (1954), are, as John Eyre has shown, easily seen in the field.

In comparison with the male of *P. woodhousei, P. jamesoni* has dark greyish-olive, not brown, upperparts, and the underparts are plain orange-rufous as opposed to whitish with dark spotting. The females are more similar, but *jamesoni* is much greyer above, lacks small buff spots on the wing coverts, and is more strongly rufous on the face, with a prominent rufous supercilium. The rufous on the throat extends on to the breast. The markings on the underparts differ in that the dark bar on each feather is not interrupted in the middle, thus forming a noticeably scaly pattern as opposed to the discrete spots on the feathers in *woodhousei.*

In order to minimise confusion with regards to the vernacular names, I propose the following –

Red-fronted Antpecker *Parmoptila rubrifrons* (Sharpe and Ussher)
Woodhouse's Antpecker *Parmoptila woodhousei* Cassin
Jameson's Antpecker *Parmoptila jamesoni* (Shelley)

The distribution of the three species is shown in Fig 1.

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Reidentification of two Nyanza Swifts from the Congo basin

by Paul Herroelen

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The Nyanza Swift *Apus niansae* is an endemic species confined to eastern Africa (Chantler & Driessens 1995). It is said to be a partial migrant based on three scattered records outside its normal breeding range. In particular, a specimen has been reported from Semliki River, Democratic Republic of the Congo (DRC)(Chapin 1939) and another from Oka, Congo; Snow & Louette (1981) suggested further study of this last isolated record was needed. The specimen, a male, was obtained on 1 February 1948 and is housed in the collections of the Academy of Natural Sciences, Philadelphia (ANSP), USA.

A second alleged specimen of *A. niansae* from this general region is a female collected on 23 April 1940 at Bambesa, Uele, DRC, and is housed in the collection of the Institut Royal des Sciences Naturelles de Belgique (IRSNB), Brussels, Belgium. Through the kindness of G. Lenglet, P. Sweet and N. H. Rice these two presumed specimens of *A. niansae* were compared at the Royal Museum for Central Africa (RMCA), Tervuren, Belgium with three *A. niansae*: one collected on the Semliki River, DRC, housed in the American Museum of Natural History (AMNH), New York, and two RMCA specimens from Ethiopia (Table 1).

Both the Oka and the Bambesa birds are rather small and their measurements fall within the limits given by Brooke (1969) for both sexes, especially delta length (Table 1). Delta-length is the difference in length between the outermost (fifth) and the penultimate (fourth) tail feathers (Brooke 1970). It constitutes a selective species feature in large plain *Apus* swifts (Chantler & Driessens 1995: Table 8).

However, when comparing these two birds and a small Common Swift *A. apus* specimen from Kasaji, DRC, with the Semliki bird and the two Ethiopian *A. niansae* specimens, the striking contrast in *A. niansae* between the pale grey-brown greater coverts, secondaries and inner primaries (P7 to P10, counted from the outside) with the other brown-blackish primaries and the remainder of the wing is lacking. In my opinion the two presumed Nyanza Swifts from Oka and Bambesa are in fact small Common Swifts. Such small birds may occur in some parts of Africa, e.g. the Cameroons, where two small specimens (wing 153 and 155 mm) were found in a sample of 16 Common Swifts (Brooke & Traylor 1967). The distinctive characteristics of *A. niansae* are however present in the specimen from Semliki, DRC and I feel this specimen is correctly identified as a Nyanza Swift. It is now the single record of this species outside its core range in Ethiopia and Kenya. It should probably be considered to be a wanderer, and consideration of Nyanza Swifts to be even partial migrants seems to be unwarranted.

TABLE 1

Biometrics of *Apus niansae*, presumed *A. niansae* and *A. apus*

Mus.+ Reg.n□ date locality country	age sex	wing-length	tail-length	depth of tail fork	delta length	length difference between P1 and P2
Apus niansae						
Brooke (1969)						
average	M	154.3	61.2	22.0	3.3	-
range		148-165	59-65	19-25	1.5-6.5	
n		44	13	22	38	
average	F	153.2	60.6	20.6	3.0	-
range		140-161	53-64.5	17-23	1.5-5.0	
n		33	12	10	27	
(Type specimen) 16 Nov 1885 Kahegi Tanzania (Chapin 1939)	F	152	64	19	-	-
AMNH 262458 26 Jan 1927 Semliki , RDC	imm	155	66	18	2.5-2.5	+1.0
RMCA 109100 6 June 1948 Cassam R. Gorge, Ethiopia	adult M	150	66	23	1.0-3.0	-2.0
RMCA 109101 8 June 1947 Sendafa, Ethiopia	adult M	150	70	-	6.0-6.0	0
presumed *A. niansae*						
ANSP 160226 1 Feb 1948 Oka, Congo	imm	157	62	20	4.0-4.0	-4.0
IRSNB 26547 23 April 1940 Bambesa, RDC	imm F	158	70 (tail not fullgrown)	-	-	-3.5
Apus a. apus						
Brooke (1969)						
average	M	169.5	77.5	-	7.8	-
range		164-183	75-80	31-35	5-11.5	
n		17	6	-	17	
average	F	171.2	74.5	30.3	8.2	-
range		164-177	69-82	24-34	5-11.5	
n		12	6	6	9	
RMCA 51279 1 March 1950 Kasaji, RDC	imm	157	67	26	5.0-5.0	-

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Oceanodroma castro (Harcourt, 1851) – nomen protectum

by Ernst Bauernfeind & Herbert Schifter

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During our recent work on type specimens held in the Naturhistorisches Museum Wien (NMW), we discovered a case of objective synonymy in the genus *Oceanodroma*, that has been overlooked so far. *Procellaria lugubris* Bonaparte, 1845, ex Natterer MS, was based on a single specimen (Holotype NMW 40.989) still in our collection (Schifter *et al.* 2003). The specimen in question is obviously not *Hydrobates pelagicus* (L.), with which it was previously synonymised, but agrees well with a small series of *Oceanodroma castro* (Harcourt, 1851). *Oceanodroma lugubris* (Bonap.) would therefore represent the oldest available synonym of *O. castro* and have priority, unless it is considered a nomen oblitum, fulfilling the conditions of both ICZN (1999) art. 23.9.1.1. and 23.9.1.2.

Herein we propose prevailing usage to be maintained for *Oceanodroma castro* (Harcourt, 1851) based on ICZN (1999) art. 23.9.:

To our knowledge the name *Procellaria lugubris* Bonaparte, 1844 has not been used as a valid name after 1899, meeting therefore the conditions of ICZN art. 23.9.1.1. Most probably the name was last mentioned by Jordans (1933: 244; in synonymy).

The name *Oceanodroma castro* (Harcourt, 1851) has been used by subsequent authors for the above named taxon, as its presumed valid name, meeting all the conditions of ICZN art. 23.9.1.2. (see appendix).

Maintaining prevailing usage, the name *Oceanodroma castro* (Harcourt, 1851) is therefore considered valid (ICZN 1999 art.23.9.) and the synonymy may be given as follows:

Procellaria lugubris "Natterer" Bonaparte, 1845; Atti d. Sesta Riunione Sci. Ital., Vol. VII, Milano 1844: 445 [publ. 1845] (Hab. Oceanum) – **nomen oblitum**
= *Procellaria lugubris* Natterer MS
= *Procellaria lugubris* "Natterer" apud Bonaparte (1856: 769 no. 55, in tabula)
= *Procellaria lugubris* apud Bonaparte (1857: 197)
= *Hydrobates pelagicus* sensu Salvin (1896: 345) et auct. sequ., nec *Procellaria pelagica* Linnaeus, 1758 [misidentification]
= *Hydrobates pelagicus melitensis* sensu Jordans (1933: 244) nec *Thalassidroma melitensis* Schembri, 1843 [misidentification]
= *Oceanodroma castro* (Harcourt, 1851: 123); – **nomen protectum**

The confusion probably dates back to Salvin (1896), who listed "*Procellaria lugubris* Natterer (fide Bp.)" in synonymy of *Procellaria pelagica* Linnaeus, 1766 [sic]) and quoted "Bonaparte Acta Ital. Mediol. 1844" [which could not be traced] as a reference (from "Bonaparte (1855)" [= 1857; cf. Zimmer 1926: 69]). This opinion was followed by Godman (1907: 1) and Hartert (1920: 1410). When Jordans (1933: 244) redescribed Schembri's taxon (based on skins collected by Hermann Grün) he discussed *P. lugubris* with Hartert and again confirmed the (supposed) invalidity of the name: "Der Name ist also in jedem Fall synonym." Although he obtained information from Moriz Sassi (then curator at the bird collection NMW) that Bonaparte's type specimen was still extant, none of them actually saw the specimen or checked its identification. Hartert (cited in Jordans 1933) furthermore added to the confusion, because he was misled by Bonaparte's 1857 statement about the type locality ("Mus. Vindobon., ex Ocean. mer."), which he erroneously interpreted as "Mittelmeer" (Mediterranean) instead of Oceano meridionale (= Southern Ocean).

The taxonomic situation of *O. castro* is currently under discussion and a probable split into two species (or several subspecies) is very likely to occur (cf. Sangster 1999). Harris (1969: 99) reported significant size differences between birds originating from the Gulf of Guinea and those from the Cape Verde Islands. If sufficient evidence becomes available to recognise a separate taxon (for birds measuring larger than *O. castro* from the Cape Verde Islands) the name *Procellaria lugubris* Bonaparte (nom. oblit.) would still be available as a subjective senior synonym under the conditions of ICZN art. 23.9.2.

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Appendix

Material examined:

Procellaria lugubris Bonaparte, 1845 nom. oblitum;

Holotype NMW 40.989 (relaxed mount), [unsexed], Southern Seas, bought from L.v. Fichtel 1807, "from Paris" [most probably originating from one of Baudin's expeditions], acquisition no. 1807.V.89.

Oceanodroma castro (Harcourt, 1851) nom. protectum;

NMW 53.344 (skin) iuv. [unsexed], Porto Santo, Madeira, 4.3.1898, leg. E.J. Schmitz no. 242, ex coll. Tschusi, bought 1906.

NMW 53.346 (skin) @&, Porto Santo, Madeira, 23.12.1897, leg. E.J. Schmitz no. 210, ex coll. Tschusi, bought 1906.

NMW 53.375 (skin) B&, Porto Santo, Madeira, 26.6.1893, leg. E.J. Schmitz no. 555, ex coll. Tschusi, bought 1906.

Hydrobates pelagicus (Linnaeus, 1758)

NMW 53.352 (skin) @&, Ibiza, Baleares, 23.4.1930, leg. H. Grün, bought 1930.

NMW 53.353 (skin) B&, Ibiza, Baleares, 27.4.1930, leg. H. Grün, bought 1930.

NMW 53.354 (skin) B&, Ibiza, Baleares, 25.4.1930, leg. H. Grün, bought 1930.

NMW 53.355 (skin) @&, Ibiza, Baleares, 27.4.1930, leg. H. Grün, bought 1930.

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First record of the Whistling Heron *Syrigma sibilatrix* for Ecuador

by Patricio Mena Valenzuela & Olaf Jahn

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The Whistling Heron *Syrigma sibilatrix* is restricted to South America, where it is represented by two disjunct populations, separated by the Amazon basin (Kushlan *et al.* 1982). The northern race *fostersmithi* is found mainly in the Colombian and Venezuelan *llanos*, which lie to the west and north of the Orinoco River. The southern nominate race is patchily distributed from Bolivia and Paraguay, through south-eastern Brazil to Uruguay and north-eastern Argentina (Hancock & Kushlan 1984). It is one of the least aquatic herons, inhabiting marshy areas in savannas, wet grasslands, rice paddies, ponds, muddy shores of lakes and watercourses, and to a lesser extent also flooded woodland (Martínez-Vilalta & Motis 1992). According to Ridgely & Greenfield (2001) the species has not been reported from Ecuador.

Between August and October 2000, Mena carried out an inventory of birds and small mammals in the community 'Asociación El Puma' (00°43'S, 76°54'W; *c.* 400 m), located *c.* 28 km SSE of Coca (Puerto Francisco de Orellana), Orellana Province. On the afternoon of 24 August he discovered a Whistling Heron, perched on a shrub *c.* 5 m above the ground. The site was characterized by a shallow pond, surrounded by grassy pasture on one side and shrubby vegetation on the other. At a greater distance the shrubs gradually turned into semi-open woodland. On a larger scale the area was part of the open and semi-open landscapes that extend along the Coca-

Tigüino road and northward through the extensively deforested country between Coca, Lago Agrio (Nueva Loja), and the Río San Miguel on the Colombian border (Sierra 1999).

The heron was seen for several minutes at *c.* 100 m distance with 10x50 binoculars under optimal light conditions, and compared on the spot with the corresponding illustration in Hilty & Brown (1986). Mena noted the following field characters that led him to positively identify the bird as a Whistling Heron. It was roughly the size of a Capped Heron *Pilherodius pileatus* or an *Egretta* egret, and first drew his attention by its basically bicoloured appearance; i.e., the greyish-black crown and mostly bluish-grey back and wings in combination with the yellowish-cinnamon neck, breast, and flanks. The median and lesser wing coverts were vertically streaked cinnamon and black. On closer examination he also noted the whitish throat, belly, and tail, as well as the blackish-grey legs, bluish-grey ocular area, and the strikingly pinkish bill with a blackish tip. These features excluded all other Neotropical herons with which the species could be confused.

It was not possible to determine the subspecies of the individual observed, but we assume that the Ecuadorian bird most likely belonged to the northern race *fostersmithi*. The distance between the study site and the south-westernmost part of the Colombian *llanos* in Meta is only *c.* 600 km, while the distance to the north-westernmost periphery of the Bolivian palm savannas of Santa Cruz and Trinidad is at least 1,600 km (estimated on the basis of Hueck & Seibert 1981). Furthermore, deforestation to the north is much more severe, with pastures and other semi-open habitats extending far into Putumayo and Caquetá Departments, Colombia. It seems possible that a bird from the Colombian *llanos* could reach Ecuador almost without the necessity of crossing unbroken tracts of forest, e.g., when migrating south-westward from the upper Río Guaviare region in Meta.

Seasonal movements reported for the northern population in north-eastern Venezuela (Friedmann & Smith 1950), as well as in the Colombian *llanos*, where the species is seemingly absent from north-eastern Meta between April and September, and from western Meta between June and December (Hilty & Brown 1986), are consistent for the observation date in Ecuador of a dispersing individual.

The Colombian *llanos* is the most likely origin of at least two other wading bird species, the Scarlet Ibis *Eudocimus ruber* and Bare-faced Ibis *Phimosus infuscatus*, which occur as casual visitors in north-eastern Ecuador (Norton *et al.* 1972, Stevenson 1972, Tallman & Tallman 1977, Ridgely & Greenfield 2001). With the ongoing deforestation in this region and to the north in Colombia, additional savanna-inhabiting bird species may reach Ecuador in the future.

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A second hornbill head from Sir Hans Sloane's (1660-1753) Museum

by F. D. Steinheimer

Received 29 April 2003

The only avian items of Sir Hans Sloane (1660-1753) known to have survived long enough to be noted in the *Vellum Catalogue*, the most comprehensive of the British Museum ancient catalogues dedicated entirely to birds (Knox & Walters 1992), are remnants of several species of hornbills, especially their skulls and beaks (see appendix). These were subsequently thought to have disappeared (Sharpe 1906).

However, in a recent publication attention was drawn to a surviving beak and casque of a Rhinoceros Hornbill *Buceros rhinoceros* originating from Sloane's collection, which had been found among other skeletal material in the collections of The Natural History Museum (Steinheimer & Cooper 2003) during research into the history of the bird collection (Steinheimer in press).

Now a second hornbill remnant of Sloane's former museum has been discovered among the hornbill holdings of The Natural History Museum's skin collection. The mummified head derives from an adult female Yellow-casqued Hornbill *Ceratogymna elata* (Temminck, 1831), as measurements and comparisons using data in Kemp (1995) show, and had been entered into the *Vellum Catalogue* sometime between 1832 and 1837. The number *310a* on its beak cross-refers it to an entry in the 25th volume of the *Vellum Catalogue*, page 310, specimen a, reading *Buceros / Rostrum, Sloane's Museum*. The specimen has never received a modern registration, but has remained among other hornbill heads and skins of The Natural History Museum since then.

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Appendix

Vellum Catalogue entries referring to Hans Sloane; specimens indicated with an asterisk are still extant at The Natural History Museum (cf. Steinheimer & Cooper 2003 for further information):

Volume 24:
page 233: *Buceros plicatus* Lath. @& / *B. niger* Vieill / *B. undulatus* / *B. javanicus* Shaw. b) rostrum Sloane's Mus. [= 267d Ost. Vell. Cat.]

Volume 25:
page 301: *Buceros rhinoceros*, L. / d) rostrum, Sloane's Mus. [=843a Ost. Vell. Cat.]*
page 305: *Buceros cavatus*, Shaw Vigors / *Buceros bicornis*, L. Temm. / c) rostrum Sloane's Mus.
page 307: *Buceros hydrocorax*, L. / a) rostrum Sloane's Mus. [= 845a Ost. Vell. Cat.]
page 308: *Buceros galeatus*, Gm. / a) rostrum, Sloane's Mus. [= 844a Ost. Vell. Cat.]
page 309: *Buceros monoceros*, Shaw / *Buceros malabaricus*, Lath. var. / a) rostrum Sloane's Mus. 319
page 310: *Buceros* [later erroneously added in pencil:] *exarhatus*, Reinw? Pl. col. 211? younger bill / a) rostrum. Sloane's Mus.*

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